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DIAPHRAGMATIC HERNIA IN CHILDREN WITH A REPORT OF THIRTEEN OPERATIVE CASES*

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OPERATIONS undertaken for the cure of diaphragmatic hernia occurring in children are rare despite numerous reports to the contrary. A thorough search of the literature emanating from New England has revealed no operative cases other than those published by the author. Perhaps such operations have been done but not reported. We have authentic information about one child in New England who survived and three in New York State who died after operation.

Vannesson in 1912 reported thirty-four cases of congenital diaphragmatic hernia in the newborn (all discovered at autopsy) and stated that the prognosis was very grave and treatment nil. In 1914 Broca, Professor of Surgery, Faculté de Médecine, Paris, described the condition accurately. He stated that nearly all of the cases were discovered at autopsy. Among the few patients operated upon for intestinal obstruction, strangulation of the bowel was the condition usually found. The mortality associated with operative interference in these cases was ninety per cent. In 1917 Holt described a case of diaphragmatic hernia in a child sixteen months old who died of pneumonia at the age of three and one-half years. In conclusion the author stated that the hernia was not amenable to treatment. Many books on pediatrics such as those published by Ehrenfest, 1922, Cutler, 1923, and Haynes, 1928, failed to mention the subject. Hess, 1922, and Lucas, 1927, devoted little space to this topic. In Abt's work on pediatrics, Richter made the statement that congenital large hernias, present from birth, offer little opportunity for surgical treatment. In 1926 Morse in a one page discussion of diaphragmatic hernia came to the following conclusion:

> "Hernia of the diaphragm is a very uncommon condition. The chance of closing the defect in the diaphragm is very small but there is a chance. Operate and give the baby what chance there is, unless the defect by x-ray is shown to be very large. In any case the chance for life is small."

Griffith and Mitchell in 1927 devoted two paragraphs to the subject with the following comment:

> "The condition is uncommon in children. There is no treatment possible except an operative procedure if incarceration occurs, and this is not likely to be of any avail."

Bolling in 1928 made the following statement:

> "In 1925 Hedblom was able to find only 22 cases in patients under twelve in whom operation had been carried out. In the non-obstructed cases thoracotomy affords greater opportunity for closure of the hernial orifice."

He cited the case of Dr. McLean's, a baby one year old treated medically.

In 1929 Kelley expressed the following opinion:

> "One should operate only if there are distressing symptoms. The hernia may be inoperable because of the size of the defect. The hernial mass may be too large to fit the thorax. If such is the case and structures become strangulated, the constriction should be relieved and steps taken to prevent recurrence, and no further attempt should be made to reduce or close the hernia opening."

As late as 1934 Trémolières affirmed that the great congenital diaphragmatic hernias were not in the surgical domain. He warned surgeons to attempt only those cases in which the hernial orifice could be easily closed. Often in these congenital cases, he continued, the torn edges of the diaphragm are so thin and friable that suturing is illusory and even with good tissue, recurrence is the rule. He believed that treatment should be a palliative therapy except in the traumatic cases and in those in which volvulus, strangulation, or perforation exists and demands immediate surgical intervention.

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Thus there is need of tolerance toward those who have hastened into print with inaccurate statements founded on lack of adequate information upon the incidence of congenital diaphragmatic hernia and the number of children who have been operated upon.

Our first case was of traumatic origin. The correct diagnosis was not established until seven months after injury. Surgical treatment became imperative for the relief of intestinal stasis and attacks of dyspnea and cyanosis. Operation was done February 23, 1921 and the account of the case appeared the following June*. In some respects this case was unique. Our researches in the literature have revealed no similar case in children hitherto published. The patient, a boy five years old, was run over by an automobile May 11, 1920, a front wheel passing over his abdomen. He was taken to a hospital in a shocked condition and remained under observation for two weeks, when he was discharged recovered. Later respiration became embarrassed and food caused distress. At night he was obliged to sit up in bed. Spells of dyspnea were frequent and sometimes accompanied by cyanosis. He was examined by many physicians, among them an able clinician of Boston, who concluded that the boy had tuberculosis of the lungs with cavity formation and that the outlook was discouraging. In December he had a severe attack of intestinal obstruction. After consulting many other physicians this patient was examined by Dr. Henry I. Bowditch, II, of Boston January 24, 1921 who arrived at the correct diagnosis from a clinical examination. Singularly enough Dr. Henry I. Bowditch, grandfather of this physician, had recognized a case of diaphragmatic hernia at the Massachusetts General Hospital in 1846 and published an exhaustive treatise on the subject.

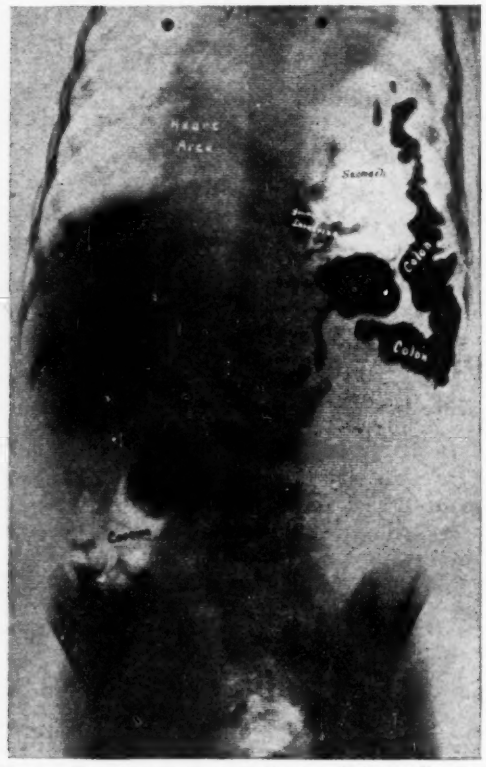


FIG. 1. Roentgenogram revealing a dextrocardia together with the colon, small intestine and stomach above the diaphragm.

The left thoracic cavity contained the stomach, small intestines, colon, left lobe of the liver, and spleen. (See figure 1.) The hernia was reduced and repaired by the thoracic route. On three occasions, at intervals of about a year, the hernia recurred involving a knuckle of the transverse colon which projected through a small opening at the suture line.

Even as late as 1921 there were few references to be found concerning the operative treatment of diaphragmatic hernia. O'Dwyer of New York in 1889 operated upon a child three years old who had a congenital diaphragmatic hernia. The case was diagnosed as purulent pleurisy. Thoracotomy was done and a diaphragmatic hernia discovered with small intestines strangulated in the left chest. The intestines were returned to the peritoneal cavity but would not remain there. The child died a few moments after the operation.

In 1896 Maylard of Glasgow reported a case in a child eight years old. There was no history of trauma but suddenly the child began to have attacks of fecal vomiting. Laparotomy revealed a diaphragmatic hernia with the splenic flexure herniated and strangulated as it passed through an aperture in the left leaf of the diaphragm. The adhesions were freed about the tear and the colon reduced. The child died the following day.

In 1902 Aue of Leipzig operated upon a boy nine years old. Laparotomy revealed most of the intestines in the left chest. Aue reduced the hernia and sutured part of the aperture in the diaphragm but left the right portion untouched introducing a strip of gauze into the incision to form adhesions. The expanding lung came in contact with the gauze and formed a barrier which closed the defect in the diaphragm. Eighteen years later the patient was leading a normal life. Aue's second case, a boy five years old, was operated upon in 1920. The aperture in the right diaphragm was partly closed and the stomach sutured to the abdominal wall. The boy died two weeks after laparotomy. X-ray revealed the stomach again in the right chest. Aue attributed failure to omission of the gauze strip as used in his first case.

Pierre Duval in 1913 reported the case of a boy twelve years old. Duval appears to be the first to use the combined thoraco-abdominal approach in repair of the diaphragmatic hernia. He resected the eighth rib and carried the inci-

*Read before the Section on Gastroenterology and Proctology at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

sion down to the umbilicus. This approach has been used by Bérard, Auvray (1913), Quénu (1920), and most modern French surgeons. We have employed this procedure in one case in which it solved our difficulties. Duval's patient had a congenital diaphragmatic hernia. Small intestines, transverse and ascending colon, cecum, and appendix were all in the left chest. The appendix was removed, the viscera returned to the abdomen, and a large tear in the diaphragm sutured. The following day a collection of fluid in the chest was aspirated. The child died on the second day.

In 1918 McCleave of Chicago operated upon a male child three months old who had a congenital false diaphragmatic hernia through the foramen of Bochdalek. Almost all the intestines had herniated through an oblique slit one inch long. The child died a few hours postoperatively.

The next year DeBuys of New Orleans operated upon a female child three months old who had the stomach twisted upon its axis, transverse colon and omentum in the left chest. The baby died of hemorrhage at operation.

Keith in 1920 reported an interesting case in a seventeen-year-old boy who had the entire stomach in the right chest from the age of eighteen months; finally symptoms became so severe that operation was attempted. By the abdominal route the stomach was freed of adhesions and pulled down; two weeks later thoracotomy was done and the opening in the diaphragm, measuring 1¼ x 2½ inches, through the foramen of Bochdalek was repaired. The boy recovered and had no further trouble.

From the cases on record it appears that when the stomach is the only organ involved in the hernia, the patient is likely to tolerate the hernia. Very rarely, however, as in van Gelder's case, the stomach may become constricted in the hiatus, perforate, and cause peritonitis. Hernias at the esophageal hiatus appear to respond better to surgery, as in the cases reported by Greiwe, Pauchet, Harrington, and Hipsley. Even Torek's patient with almost all the gastrointestinal tract herniated through an enlarged esophageal hiatus might not have died if the stomach had not been enormously distended with fluid. Speik and Greiwe both reported successful operative cases in 1920 involving the stomach alone, one through the leaf of the diaphragm, the other through the esophageal hiatus. Greenwald and Steiner in 1928 made the following statement:

> "It seems justifiable, therefore, to conclude that hernias through the oesophageal opening offer a better outlook in that they are more amenable to operation. Of the six patients who died, in only one was the hernia through the oesophageal opening. . . . Of the five operations that were successful, four were oesophageal and one posterior in location."

On the other hand, a congenital diaphragmatic hernia may involve almost the entire gastrointestinal tract and cause no symptoms as in Newcomet's case of a young athlete who did not begin to complain of serious trouble until he was seventeen years old. The condition was revealed by x-ray examination two years later. A recent personal communication from Dr. Newcomet states that this young man was operated upon and died several days later.

Attempts at reduction of the hernia and palliative surgical measures such as gastroenterostomy and gastropexy have been done by Albanese (1904), Bythell (1915), Downes, two cases (1918), Willy Meyer (1919), Abadie (1925), Robertson (1929), and Ager (1930), but these should be classified as incomplete operations and physiologically unsound. Robertson's patient died after recurrence, and Ager's hope that postoperative adhesions would close the aperture in the dome of the left diaphragm is indeed forlorn.

We have collected 303 cases from the literature on diaphragmatic hernia in infants and children discovered as follows:

	United States	Foreign	Total
Autopsy	38	127*	165
X-ray	45	45	90
Clinically	20	15	35
At operation	4	9	13
	107	196	303

*This number includes 34 cases found at autopsy assembled by Vannesson in a Paris thesis, 1912, and 24 anatomical specimens of diaphragmatic hernia found in the newborn reported by Sir Arthur Keith from various London medical museums.

Of the 303 cases, 44 were operated upon, 24 successfully and 20 with fatal termination, a total mortality rate of 45.5 per cent.

	United States	Foreign	Total
Patients lived	15	9	24
Patients died	11	9	20
	26	18	44

In our clinic there have been thirteen cases of diaphragmatic hernia of congenital origin in children, ten of whom were operated upon. In one of these the hernia recurred three times at intervals of about a year. This patient has been well without recurrence since 1924.

Author's Operative Cases	Mortality
10 patients, one death	10%
13 operations, one operative death	7.7%

Adding our operative cases to the general list, the total number becomes 54 patients and 57 operations with the general patient mortality rate reduced from 45.5 per cent to 38.8 per cent and the operative mortality to 36.6 per cent.

Of the patients not operated upon, one died at the age of six weeks, one child four years old is awaiting operation, and in one the condition was discovered at autopsy.

SUCCESSFUL OPERATIONS IN CHILDREN, AGE – TO FIFTEEN YEARS—UNITED STATES

	Date	Author	State	Sex	Age	Approach	Organs Herniated
1.	1920	Greiwe	New York	F	5 yrs.	Abdominal	Stomach
2.	1920	Speik	California	M	5 yrs.	Abdominal	Stomach
3.	1921	Truesdale	Massachusetts	M	5 yrs.	Thoracic	Most of g.-i. tract, spleen
4.	1921	O'Connell	Rhode Island	M	3½ yrs.	Abdominal	?
5.	1921	Goetsch	New York	F	8 yrs.	Thoracic	?
6.	1922*	Truesdale	Massachusetts	M	6 yrs.	Preliminary cecostomy Thoracic	Trans. colon
7.	1922*	Truesdale	Massachusetts	M	7 yrs.	Abdominal	Transverse colon
8.	1924*	Truesdale	Massachusetts	M	8 yrs.	Abdominal	Transverse colon
9.	1924	Behrend	Pennsylvania	M	7 yrs.	Abdominal	Transverse colon, stomach, omentum; 2 operations
10.	1925	Sherwood	New York	M	8 yrs.	Abdominal	Most of g.-i. tract, spleen
11.	1926	Truesdale	Massachusetts	F	6 yrs.	Combined	Transverse colon, omentum
12.	1927	Woolsey	California	F	35 days	Abdominal	Most of g.-i. tract, spleen
13.	1928	Truesdale	Massachusetts	F	5 yrs.	Thoracic	Most of g.-i. tract, spleen
14.	1929	Carrington	Ohio	M	15 yrs.	Combined	Most of g.-i. tract, spleen
15.	1929	Bettman, Hess	Illinois	F	3½ mos.	Combined	Intestines, colon
16.	1930 (Mar.)	Sanders	Tennessee	F	5½ yrs.	Combined	Stomach, colon, omentum
17.	1930 (Jun.)	Truesdale	Massachusetts	F	1 yr.	Thoracic	Stomach
18.	1930 (Jul.)	Truesdale	Massachusetts	F	17 mos.	Thoracic	Most of g.-i. tract, spleen
19.	1930 (Oct.)	Harrington	(Mayo Clinic)	M	12 yrs.	Abdominal	Stomach, colon (congenital short esophagus)
20.	1931 (Jan.)	Truesdale	Massachusetts	F	12 yrs.	Thoracic	Most of g.-i. tract, spleen, pancreas
21.	1931 (Jun.)	Donovan	New York	M	4 mos.	Abdominal	Most of g.-i. tract, spleen
22.	1931 (Oct.)	Robb	Minnesota	M	4 wks.	Abdominal	Most of g.-i. tract, spleen
23.	1931 (Nov.)	Coryllos	New York	F	13 days	Combined	Most of g.-i. tract, spleen
24.	1932	Johnson, Bower	California	M	41½ hrs.	Combined	Most of g.-i. tract, spleen
25.	1935 (Mar.)	Truesdale	Massachusetts	F	10 yrs.	Thoracic	Most of g.-i. tract, spleen, edge of liver
26.	1935 (Apr.)	Truesdale	Massachusetts	M	13 yrs.	Thoracic	Intestines, colon, spleen, cecum, appendix
27.	1935 (May)	Truesdale	Massachusetts	M	11 yrs.	Thoracic	Most of g.-i. tract, spleen

*Recurrence.

SUCCESSFUL OPERATIONS—FOREIGN

	Date	Author	State	Sex	Age	Approach	Organs Herniated
1.	1902	Aue	Germany	M	9 yrs.	Abdominal	Stomach, colon, spleen
2.	1927	Jowers	England	M	7 yrs.	Abdominal	Intestines, colon
3.	1928	Pauchet, Luquet	France	?	3 yrs.	Combined	?
4.	1929	McFadden	England	F	4 yrs.	Thoracic	Intestines, colon, spleen
5.	1930	Schönbauer-Warkany	Germany	?	3 mos.	Abdominal	Intestines, colon, spleen
6.	1931	Hipsley	Australia	F	10 yrs.	Abdominal	Stomach
7.	1932	Iizuka and Sano	Japan	?	Infant		Most of g.-i. tract
8.	1933	Bryce and Gray	England	M	7 yrs.	Abdominal	Stomach, colon, spleen
9.	1934	Courty	France	?	7 yrs.	Abdominal	Colon, right chest

UNSUCCESSFUL OPERATIONS IN THE UNITED STATES

1.	1889	O'Dwyer	New York	?	3 yrs.	Thoracic	Intestines, strangulated
2.	1917	McCleave	Chicago	M	3 mos.	Abdominal	Intestines
3.	1919	DeBuys	Louisiana	F	3 mos.	Abdominal	Stomach, colon, omentum
4.	1924	Carman	Mayo Clinic	M	9 yrs.	Abdominal	Most of g.-i. tract, spleen
5.	1924	Carman	Mayo Clinic	F	5 yrs.	Abdominal	Most of g.-i. tract, spleen
6.	1927	Torek	New York	M	4 yrs.	Abdominal	Most of g.-i. tract, spleen
7.	1927	Clark	Illinois	F	3½ yrs.	Thoracic	Stomach, ruptured abscess
8.	1928	Olmsted	Washington	F	6 mos.	Abdominal	Intestines, spleen
9.	1929	Brown	Pennsylvania	F	5 yrs.	Abdominal	Most of the g.-i. tract, spleen
10.	1931	Donovan	New York	?	6 wks.	Abdominal	Most of the g.-i. tract, spleen
11.	1934	Hedblom	Mayo Clinic	M	4½ yrs.	Abdominal	Most of the g.-i. tract, spleen
12.	1935	Truesdale	Massachusetts	M	9 yrs.	Thoracic	Most of the g.-i. tract, spleen

UNSUCCESSFUL OPERATIONS—FOREIGN

1.	1896	Maylard	Scotland	?	8 yrs.	Abdominal	Colon, strangulated
2.	1913	Duval	France	M	12 yrs.	Combined	Most of the g.-i. tract; spleen
3.	1920	Aue (Heidenhain op.)	Germany	M	5 yrs.	Abdominal	Stomach, colon, spleen, right chest
4.	1921	Barnett	England	?	8 mos.	Abdominal	
5.	1922	Lepoutre	France	F	3 mos.	Combined	Intestines, colon, spleen
6.	1923	Wiemann	Germany	M	15 yrs.	Thoracic	Intestines, colon, spleen
7.	1931	Unshelm	Germany	M	9 mos.	Abdominal	Stomach, spleen
8.	1932	Lauenstein	Germany	M	9 mos.	Abdominal	Most of g.-i. tract, spleen
9.	1934	Barrett, Wheaton	England	M	4½ mos.	Abdominal	Most of g.-i. tract, spleen

Greenwald and Steiner in their report of eighty-two cases of congenital diaphragmatic hernia in children (1912-1928) found that forty-seven cases were diagnosed at autopsy, in four the method was not stated, probably discovered at autopsy. Intravitam diagnosis was made in twenty-seven cases, six clinically and twenty-one at routine x-ray examination. In addition to those mentioned by Greenwald and Steiner the following authors have reported cases found at autopsy: Anossoff (2 cases), Barford, Barney and Evans (2 cases), Becker, Benda, Blumenfeld, del Carril, Cautley, Chapman, Crumbie, de Bruin, Dérome, Dodds, Dunne, Falcone, Giangiobbe, Gilford, (2 cases), Grénet, Guy, Harper (2 cases), Holt, Hume, Jacobs (4 cases), Karlin, Kleine, Larson, Liepmann, Longaker, Lull, Massot, McLannahon, Metcalf, von Mikulicz-Radecki, Monks, Newberger, Oliphant, Palliez, Pistocchi, Putschar, Quénu, Rawes, Reichard, Reviglio, Salomon, Sighinolfi, Smith, Stenzel, Vichard, Williams, H. O., Williams, P. F., and Zamorani.

Other reports in which the condition was discovered by routine x-ray examination have appeared by the following authors: Abercrombie, Ager, Bradley, Brown, Brun, Cabitto (2 cases), del Carril, Connors, Conybeare, de Elizalde, Epstein (3 cases), Greenway, Giustinian and Antonelli, Giustinian and Estiu, Haroen, Healy, Jansen, Jenkinson, Kinney, Klebs, Lamarque, Lauenstein (2 cases), Menville, Morrison, Nalbant, Nobécourt, Pancoast, Paterson, Philips, Rivarola, Roberts, Rossi, Schisler, Schönfeld, Sennels, Stimson, de los Terrêros, Thursfield, Trémolières, Tuscherer, van Gelder, and Viallet. All but seven of these patients, ranging in age from one week to fifteen years, were alive at the time the articles were written. Klebs' patient lived six years with the left diaphragm entirely absent. De Elizalde's patient died at the age of four months. He stated that his patient did not do well from birth, but that even when operation is done under favorable conditions, only forty-one per cent of the patients survive. In Jenkinson's case the condition was found by chance when rib resection was done for empyema.

The following authors report cases in which the condition was diagnosed correctly clinically: Ankerhold-Hellner, Barrett and Wheaton, Bonzanigo, Donovan (3 cases), Fischer, Hunter, Johannsen, LeWald, Peter and Pokorny, Philippi, Trillat and Belly (2 cases). In nine cases the diagnosis was confirmed by autopsy. Ankerhold-Hellner's patient died at the age of five weeks as surgical intervention was being considered. In Hunter's case the infant's heart was kept beating for an hour, the left lung was one fourth the normal size and had two lobes. The right lung had three rudimentary lobes. Only the rudiments of the left half of the diaphragm were present indicating incomplete fusion in embryonic life. The appendix was high in the epigastrium, the stomach unrotated in the chest and the ascending and transverse colon in the left thorax. Trillat and Belly's two cases were in female infants who died shortly after birth. These two cases were encountered in 2,180 deliveries.

In Philippi's and Fischer's cases the parents would not consent to operation. LeWald interpreted his case as congenital short esophagus and thoracic stomach; no defect was seen in the diaphragm at the time of operation and the stomach could not be returned to the abdomen because of the very short esophagus.

October, 1931, we published a series of twelve operative cases of diaphragmatic hernia from our clinic, nine of which were in children. Each was without a sac, false hernia or *hernia spuria*. Figure 2 shows the usual sites of herniation in

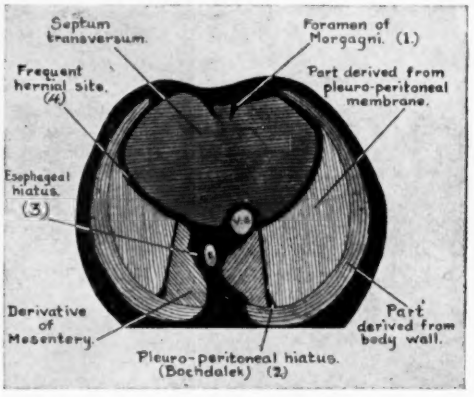


FIG. 2.

the diaphragm. None of the apertures in children were at the esophageal hiatus, a common site of hernia, site 3. Three were through the foramen of Bochdalek, site 2. In all the rest of the cases operated upon, including the four to be reported, the tear extended laterally to the periphery of the diaphragm in the weak area in the dome corresponding with the point of fusion between the pleuroperitoneal membranes and the septum transversum, site 4. In one of these cases there was a second tear at the foramen of Morgagni, site 1. In the traumatic cases, we have assumed that a congenital origin preexisted because of the thinness of the diaphragmatic musculature at the site of the tear, the sluggish response to the faradic current indicating trophic disturbance in this area, and the presence of other congenital malformation such as harelip. Thus congenital malformation of the diaphragm was doubtless an antecedent of the traumatic injury. As Quénu remarked in 1920, it is very rare for a normal diaphragm to sustain injury even in cases of serious trauma.

Herewith follow the reports from our clinic of four additional operative cases of congenital diaphragmatic hernia in children.

CASE X. A. J. McH., No. 33626. This patient was a girl ten years old born May 11, 1924 in normal labor. Soon after birth, symptoms of labored breath-

ing, cyanosis, and altered digestion occurred. At the age of two and one-half years her ailment was diagnosed as pulmonary tuberculosis. She was sent to Denver, Colorado with her mother. X-ray examination at the Children's Hospital there revealed a diaphragmatic hernia with the entire stomach and loops of intestine in the left pleural cavity. (See figure 3.) The examiners found no evidence of tuberculosis. Physicians stated that the hernia was so large and so involved that it could not be cured by operation and that she would remain in a precarious state.

Despite her handicaps, however, the patient continued to live the life of a cripple with constantly disturbed gastrointestinal, respiratory, and circulatory functions. She was subject to frequent attacks

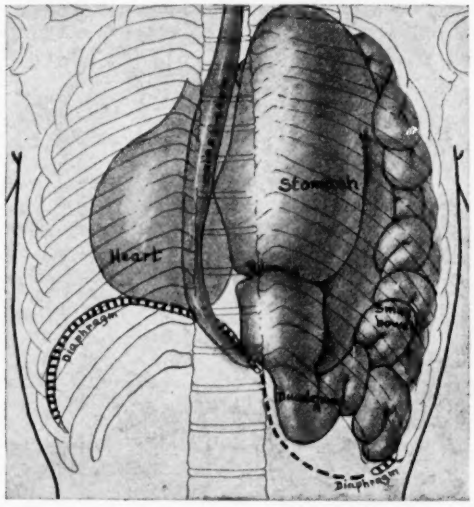


FIG. 3. Case X. Drawing made from x-ray film showing inverted stomach and loops of intestine in the left pleural cavity at 2½ years.

of smothering, cyanosis, coughing and vomiting. Her physical activity was greatly limited because of the dyspnea, aggravated by the intake of food. During the past year these spells became more frequent and more severe. The attacks came on suddenly; they began with belching and coughing followed by choking, cyanosis, and generalized convulsions. She would be in terrifying agony until relieved by belching and vomiting. Her mother stated that in several of these attacks during the past month the child had the appearance of impending death. Her diet was limited. She was able to take sparingly of fish, cereal, grape-juice, and ice cream. Water and most fluids, however, distressed her immediately. The two weeks before her arrival were spent in Carlson Hospital, Omaha. There it was felt that her condition was so critical because of obstruction that, unless relieved by surgery, she would succumb in one of her attacks.

Our physical examination revealed a poorly nourished, pigeon-breasted, pale slender girl. There was left border dullness at the sternum, with location of heart sounds revealing a dextrocardia. The left chest was barrel-shaped, hyperresonant, full of rumblings, tinkles, and peristaltic sounds. The thorax showed the rachitic rosary. The abdomen was markedly scaphoid. The body diameter at the sternum was twice that measured at the umbilicus. X-ray examination with barium meal and enema revealed an inverted stomach, all the small intestines, two-thirds of the colon, cecum, and appendix in the left chest.

A protein diet was employed for two weeks. During this period attacks of bowel obstruction recurred at about the same time each day lasting from one-half hour to two hours. They were relieved by frequent change of posture and massage of the abdomen. Enemata could not be tolerated.

Operation was done March 4, 1935. Under gas-oxygen-ether positive-pressure anesthesia administered by Dr. A. H. Miller the thorax was opened by a semilunar incision beginning over the costosternal cartilaginous portion of the fifth rib, sweeping downward and backward over the sixth and seventh ribs ending over the tubercles of the seventh and eighth ribs posteriorly. The sixth and seventh ribs were removed. The pleura was then opened and the flap thrown back on its base.

This opening exposed the contents of the left pleural cavity which consisted of the inverted stomach, omentum, entire length of the small intestine, the appendix, ascending and transverse colon and the spleen. (See figure 4.)

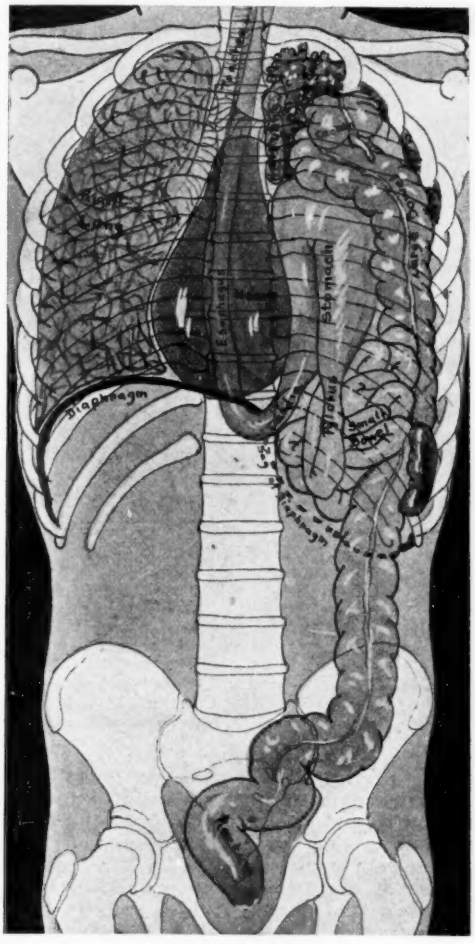


FIG. 4. Case X.

The stomach was only moderately distended, upside-down in position and occupying much of the apical and posterior portions of the left pleural cavity; the ileocecal region with the appendix was just below the clavicle. Much to our surprise the small bowel was well deflated and coiled in a comparatively small mass above the diaphragm, which was found depressed below the level of the costal arch. The spleen lay in the costophrenic angle. The entire large omentum and all the large intestine ex-

cept the descending colon were above the diaphragm. The liver edge could be discerned protruding through the aperture. The lung was an apparently rudimentary organ entirely collapsed.

More room was required to deal with the hernia; so the eighth and ninth ribs were removed. Here and there adhesive bands which attached the omentum and viscera to lung and pericardium were severed. The hernial opening was discovered to be transverse through the middle of the diaphragm about five inches in length and extending from the para-esophageal musculature toward the left to the

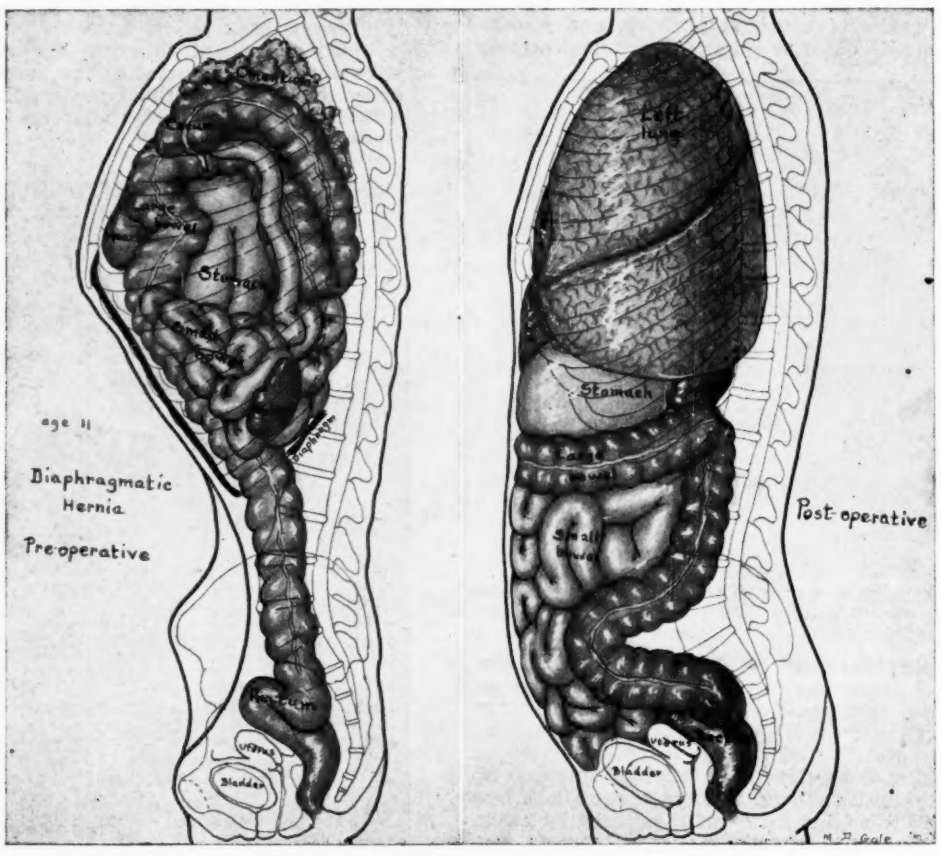


FIG. 5. Case X. Profile view of organs and contour of the body before and after operation.

periphery of the diaphragm. The structures in the aperture, particularly the spleen and intestines, were firmly adherent to the margin of the opening above and below. Separating and freeing these was most difficult and time-consuming, and the most dangerous part of the operation. When accomplished the edges of the aperture were grasped with Allis forceps, and the margins raised and spread apart. The operation of reduction was then begun.

First the spleen was severed from its attachments and passed downward through the opening, then the small intestines and omentum reduced. No little difficulty was met in replacing the colon and stomach. This step was finally accomplished by using a dry gauze sponge as a contiguous carrier. As the long narrow sponge was tucked downward through the hole, it carried the bowel with it. Eventually the colon and stomach were reduced in this manner. Finally the opening in the diaphragm was closed by a running suture of black silk (No. 7). Several interrupted sutures of the same material were applied at intervals of about an inch. The thoracotomy wound was then closed with interrupted sutures of silkworm gut.

The patient's condition during the operation was not alarming at any time. The duodenal tube was passed and about one ounce of brownish fluid evacuated from the stomach. Hypodermoclysis of 800 cc. of saline was given. The following day the child took small amounts of water and milk by mouth. Temperature was 100.2° by rectum, pulse 140, respirations 24. Except for incisional pain, the general condition was satisfactory. During the early morning of March 6 she vomited frequently for a period of five hours. The mother had been warned never to give the child an enema because at one time when given an enema at the hospital in Denver the child became deeply cyanosed, dyspneic, and nearly expired. Now an enema was clearly indicated, and we reasoned that if the hernia was reduced, the success of an enema was of vital significance. It was given and to the great surprise of mother and child, no trouble ensued. The result was satisfactory and this proved the turning-point in the convalescence. Vomiting ceased. At noon she drank six ounces of orange juice. The following day, March 7, the patient ate with relish a portion of macaroni and cheese. She soon showed marked improvement and commented eagerly on the appearance of her abdomen which was no longer scaphoid but rounded.

By March 10 the temperature was normal. The bowels continued to move well with enemata. March 26 x-ray examination showed an exudate in the

left chest and about 500 cc. of turbid fluid was aspirated. April 11 she was discharged recovered, having gained twelve pounds during her convalescence. She now swims, rides a bicycle, and otherwise leads a strenuous life. Before operation the patient measured four feet, ten inches in height and weighed fifty-two pounds. By August 12 her weight was seventy-two pounds, and she was two inches taller. Figure 5 shows position of organs before and after operation.

CASE XI. J. N., No. 33908. An intelligent, coöperative boy of thirteen years, poorly nourished and underdeveloped, was admitted March 30, 1935 with the following history:

Except for frequent spells of "colic" this child seemed normal until the age of eleven months. At that time a severe cold with paroxysmal coughing was thought to be pertussis. At fourteen months he had severe attacks of vomiting which lasted for five days and nearly proved fatal. Relief was finally obtained by enemata. X-ray film then showed "congestion of the left lung." A diaphragmatic hernia was not detected. From the age of eighteen months attacks of vomiting came on every two weeks with intense upper abdominal pain and belching of foul-smelling gas. There was no cyanosis or dyspnea. When five years old, the boy had a second attack of "pertussis". After one severe coughing spell he was very ill, and vomited thereafter every night for six months. Roentgen rays taken in Los Angeles showed pneumothorax and collapsed left lung. When repeated shortly afterwards in Oakland the films showed the colon protruding through the diaphragm into the left pleural cavity. At the age of six, left phrenicotomy was done in Oakland, California, without subsequent improvement. In spite of his physical handicap, however, the boy managed to lead a fairly active life.

Our physical examination revealed no abnormalities of eyes, teeth, or throat. The right chest was clear, and breath and voice sounds normal. The left chest was somewhat dull over the entire middle and lower portions with breath sounds diminished over these areas. Intestinal gurglings and murmurings were audible throughout the left chest. The heart was markedly displaced to the right with left border and maximal beat at the sternal line. Sounds were regular, of good quality, with no murmurs. Over the left scapula was a small phrenicotomy scar.

The abdomen was soft, somewhat distended and tympanitic on the left side as far as the pelvic brim. There were no masses, spasm, nor tenderness. Extremities were negative.

Examination of the blood revealed a mild grade of anemia with 3,840,000 red cells, 5,900 leucocytes, and 75 per cent hemoglobin.

X-ray examinations, April 2, 1935, showed the cardiac end of the stomach displaced laterally, lying above a narrow shelf-like portion of the diaphragm. The thoracic portion of the stomach was larger during inspiration. The stomach was atonic, markedly dilated, and nearly filled the abdomen. The gastric rugae were thickened and tortuous. At six hours there was an eighty per cent residue in the stomach. All the small intestine, two-thirds of the colon, cecum, and appendix filled the left chest. At twenty-four hours the stomach still contained a small residue of barium.

Operation was done April 6, 1935; the thorax was opened in the same manner as described in Case X. The seventh, eighth, and ninth ribs were cut and the flap containing the ribs reflected upward. The ribs were not removed. The chest contained the cardiac end of the greatly enlarged stomach, the major portion of the colon with cecum and appendix, all the small intestine, and the spleen (figure 6). The defect in the diaphragm extended laterally from the aorta to the periphery. Adhesions around and beneath the opening in the diaphragm were freed with great effort.

The viscera were replaced with some difficulty. The aperture in the diaphragm was then sutured with silk and the operative wound closed with through-and-through mass sutures of silkworm gut.

Early postoperative progress was excellent with temperature nearly normal and bowel movements normal. On the third postoperative day 250 cc. of turbid fluid was aspirated from the left pleural

FIG. 6.

cavity. April 11 a chest tap yielded 250 cc. of blood-stained fluid. The following day a tube was inserted to facilitate drainage and a transfusion was given. The next two weeks the patient made steady progress. The chest was irrigated daily with chloramine. May 14 the patient complained of pain in the left shoulder. It was also noticed that the pulse rose to about 120 when the boy was active. To correct some degree of left scoliosis of the spine and relieve the pain in the left shoulder, a plaster cast was applied May 29 with marked improvement in the patient's condition. The cast was removed June 11. The patient was discharged June 15, with a small sinus in the left chest still draining. August 1 the patient reported that he had gained ten pounds and was looking forward to entering school in California in September. Figure 7 shows the position of the organs after operation.

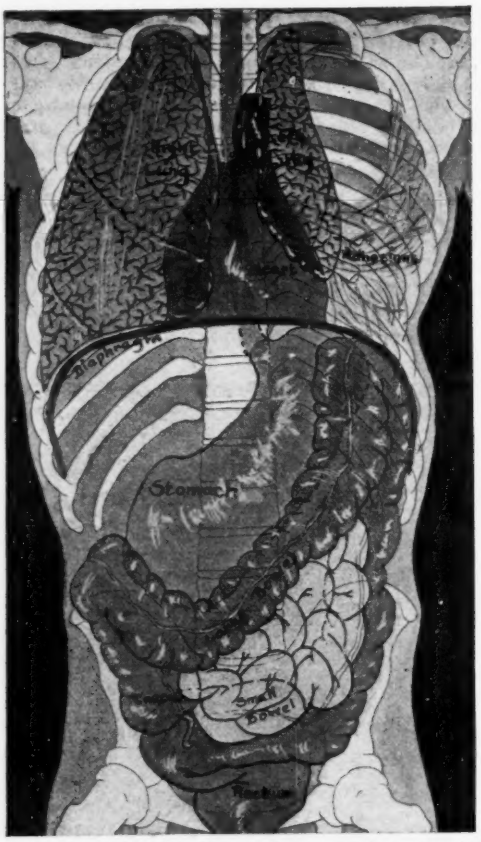


FIG. 7. Case XI. A composite drawing from x-ray films taken after operation and showing small intestines and colon in their normal position below the diaphragm.

CASE XII. A boy, nine years old, the fourth child of normal parents. Delivery was by breech presentation. During infancy feeding the child was a difficult problem and cyanotic spells were frequent. When thirteen months old he was placed in a New York hospital for regulation of feeding. At this time x-ray examination revealed the small intestines in the left chest. Each night this child manifested thoracic distress relieved after vomiting. For four months prior to admission to our clinic April 5, 1935 these attacks had not recurred. The child played with his schoolmates and was an intelligent fourth grade pupil. Previous illnesses included rheumatic heart disease and the patient was reported to have had pneumonia three times. He complained of pains throughout his limbs and joints with intermittent rise of temperature.

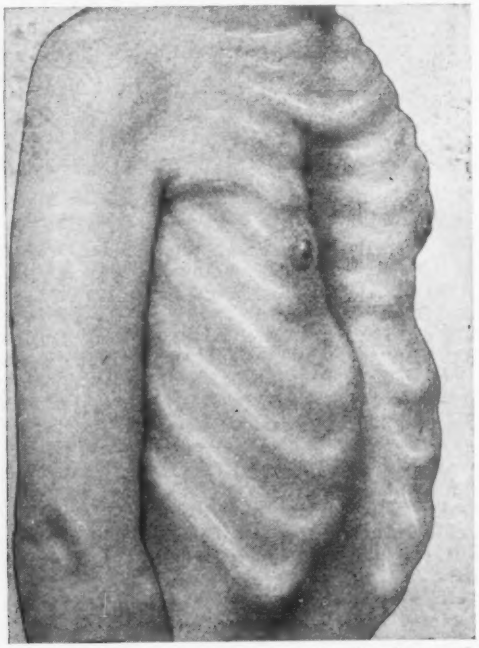


FIG. 8. View of chest in Case XII showing depressed sternum.

Physical examination revealed a pale, slender boy of nine with choreiform movements. The tonsils were large and pitted. Blood pressure was 105/60.

The thorax was funnel-shaped. (Figure 8.) The entire right chest was hyperresonant. The left chest was flat over the lower half with diminished breath and voice sounds. No peristaltic sounds were audible at the time of the examination. The apex of the heart lay to the right of the sternum. A violent cardiac impulse was seen in the right fourth interspace. The heart beat was vigorous, abnormally rapid, with a loud precordial systolic murmur. The electrocardiographic tracing revealed simple tachycardia and deep Q waves in leads 1 and 2 of uncertain significance.

A diagnosis was made of congenital diaphragmatic hernia with heart disease, rheumatic or congenital, and mitral stenosis. It was decided that the condition of the heart could withstand the operation for reduction and repair of the hernia, although the marked dextrocardia and funnel chest might present difficulty in the return of the heart to its normal position after reduction of the hernia.

A barium meal on April 8 revealed a portion of the stomach and all the small intestines in the left chest. (See figure 9a.) April 9 a barium enema showed all the colon proximal to the splenic flexure and appendix in the left chest. (See figure 9b.) At the base of the left chest laterally, there was an area which contained no loops of bowel and which was presumably occupied by the spleen.

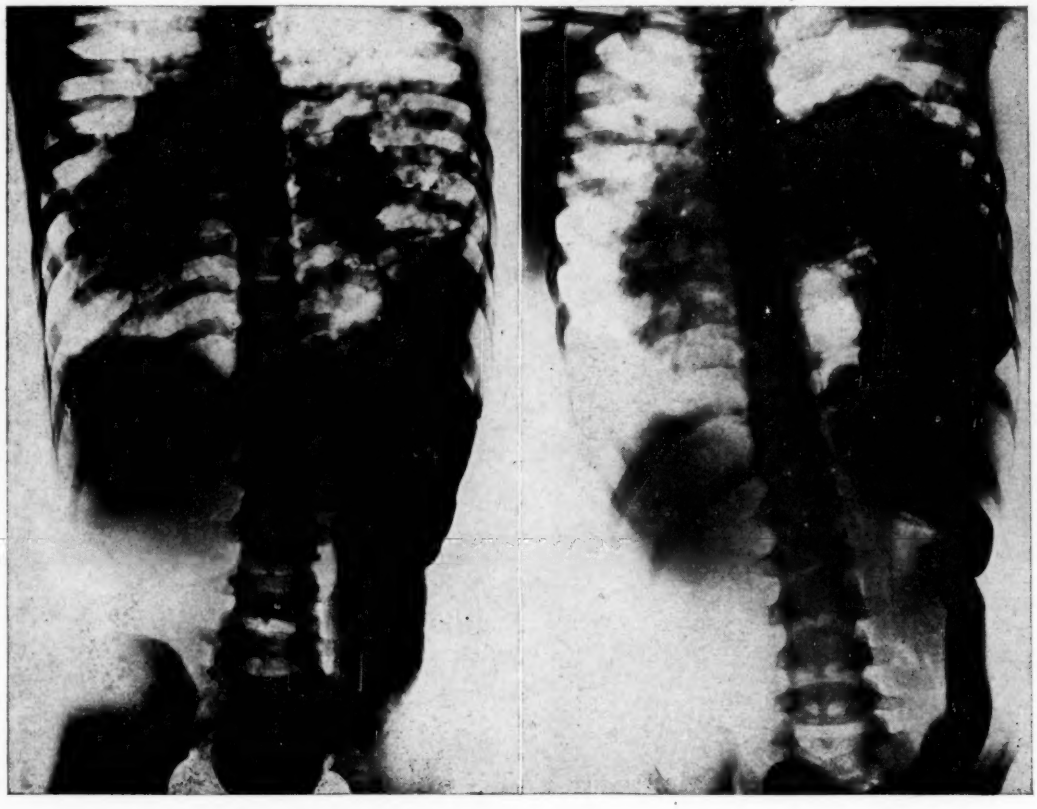
April 13, 1935 operation was done by the thoracic route. The eighth rib was severed at each end, the flap thus made turned upward, and the ninth rib severed at one extremity. The heart was entirely to the right of the sternal indentation which formed an almost complete partition between the two sides of the chest. The rent in the diaphragm extended out to the midaxillary line, somewhat more posteriorly than in the two former cases. The large bowel was firmly adherent to the edge of the hiatus. The adhesions were very dense and tough, and had to be severed before the viscera could be replaced in the abdominal cavity. Part of the bowel could not be dissected free and was left attached to the underside of the diaphragm, the aperture being approximated above it. The rent was closed with a running suture of silk starting medially and continuing gradually toward the periphery. Near the outer edge several interrupted silk sutures were required to close the rent. The chest wall was closed with interrupted sutures of heavy silkworm gut. In the lateral sulcus of the diaphragm a small soft rubber tube was placed, secured to the parietal pleura with plain No. 0 catgut and drawn out through a stab wound. Diathermic coagulation was used for all bleeders.

The patient reacted well immediately following the operation but increasing pallor was noticed, and the day after operation he was given a blood transfusion. Temperature was 101.6 degrees, pulse 130. Breathing was labored. Therefore he was placed in an oxygen tent with improvement in his condition, temperature between 100 and 101 degrees

and pulse 120. The following morning a chest tap yielded 400 cc. of dark bloody fluid. Auscultation revealed signs of pneumonia on the right side, although x-ray examination showed no evidence of gross consolidation. There was a left hydropneumothorax, the fluid level being opposite the fifth interspace posteriorly. The mediastinum remained displaced with the right cardiac border in contact with the lateral wall of the chest. The patient was restless and dyspneic during the night of April 5. The following morning of the third postoperative day at about 5:00 a. m. he became cyanotic and expired.

A restricted postmortem examination through the incision revealed death due to asphyxia. The left pleural cavity contained about 600 cc. of blood-stained fluid with a number of large clots. This blood apparently came from the lateral aspect of the diaphragm where it was cut for a short distance. The line of suture was intact and held firmly. The left lung was collapsed. The left pleural cavity extended beyond the midline, the heart being entirely on the right side with a considerable degree of torsion on the great vessels. The right ventricle was hypertrophied, undoubtedly the result of pulmonary resistance. No valvular disease was demonstrable. The right lung and heart showed signs indicating asphyxia. Although much blood was lost, most of which was replaced by transfusion, there was no recent copious hemorrhage to account for the rapid exitus. Asphyxia was regarded as the most logical immediate cause of death, aided by the left hemothorax. The right lung showed small areas of hemorrhage, with a few areas suggesting bronchopneumonia, and contained fluid. Both lungs showed marked congestion.

The lesson to be derived from this case lies in the recognition of the cause of the concealed hemorrhage which was an important factor in the cause of death. At first it was difficult to explain the presence of blood in the left pleural cavity. Upon minute inspection, however, two small veins were found open, one in the costophrenic sulcus of the diaphragm and the other at the angle of the thoracotomy incision where the layers of the thoracic wall overlapped. Immediately after complete closure of the thoracotomy wound and artificial expansion of the left lung, the negative pressure within the pleural cavity was artificially increased to or beyond the normal degree. The suction thus created probably kept the ends of these veins open and bleeding continued unimpeded in the free pleural cavity.



a b

FIG. 9. Case XII.

a. Roentgenogram after barium meal showing small intestines in the left chest.

b. Roentgenogram after barium enema showing colon in left chest.

Inasmuch as no other source of bleeding could be detected, it seems plausible to assume that, even from open ends of small veins, a sufficient amount of blood can be extracted by suction to jeopardize life. We suggest therefore, exercise of the utmost care in obtaining complete hemostasis of all vessels communicating with the pleural cavity. Possibly the use of the diathermy instead of ligation of vessels may have been a factor in affording points of origin for bleeding.

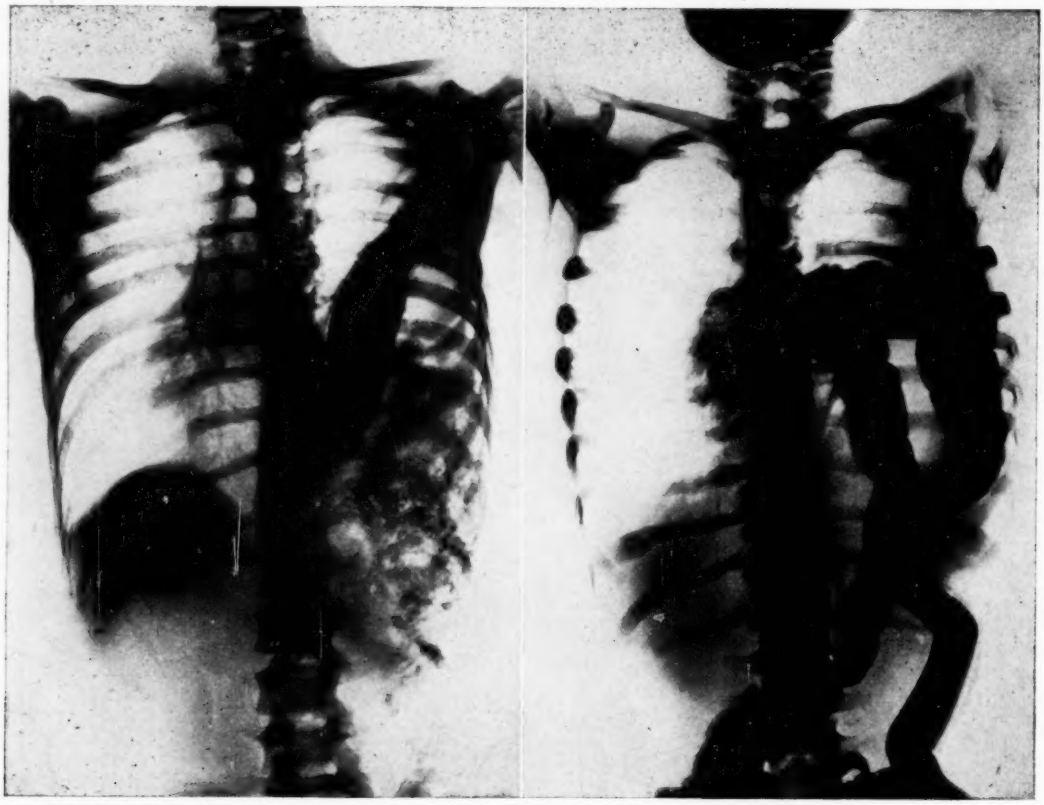
CASE XIII. No. 34198. W. B. This patient was a boy eleven years old who had the appearance of a child of seven. He spoke haltingly and his mind seemed sluggish. His mother reported that his condition was normal until he was five years old. At that time while riding his tricycle he was struck

by a hit-and-run motorist; the tricycle was demolished and the handlebars were forced violently against his abdomen. He was taken to the Millard Fillmore Hospital, Buffalo, in a critical condition. For two months he complained of severe pain in his right chest. X-ray examination at this time showed a dark shadow in the right chest thought to be fluid. He suffered from dyspnea and difficulty in taking food. Two months later he was removed to the Children's Hospital where the diaphragmatic hernia was disclosed by x-ray examination. He remained there under observation for two years. His parents were informed that nothing could be done to cure the diaphragmatic hernia and that the intestines would probably become strangulated and cause death.

From this hospital the patient went to a convalescent home for six months and finally returned home in the care of his family physician, Dr. A. J. Ferris. The history is one of increasingly severe attacks of sudden epigastric pain with dyspnea, vomiting, sweating, and weakness. Spells occurred after eating and lasted for an interval varying from a few minutes to several hours. During the past year they occurred about once a week. The parents, desperate, decided to take the risk of an operation.

Physical examination revealed a poorly developed and poorly nourished boy of eleven. Blood pressure was 95/50. The percussion note was flat over the lower left chest and voice and breath sounds were diminished. The heart was considerably displaced to the right; sounds were slow, regular, and of good quality. Gurglings were audible in the left chest posteriorly. The abdomen was scaphoid. On May 10 x-ray examination of the gastrointestinal tract with barium by mouth, showed the inverted stomach with its greater curvature at the level of the fourth rib and loops of small intestine in the left chest. (See figure 10a.) May 11, the barium enema revealed the colon in the left chest, with constriction of the loops as they passed through the aperture in the diaphragm. (See figure 10b.)

May 15, 1935 the hernia was repaired through a thoracotomy approach. Long sections of the eighth and ninth ribs were removed. In the left chest were the stomach, spleen, and most of the large and small intestines. The structures were adherent about the margin of an aperture which measured five inches in length. These adhesions were cut and all the abdominal viscera in the chest replaced below the diaphragm. The tear, extending from the pillar on the left side of the esophagus, to the perimeter of the diaphragm, was closed with a continuous silk suture. Several interrupted sutures of silk were then taken along the suture line to reinforce it and a small soft rubber drainage tube was secured to the dome of the diaphragm and brought out through the incision. The chest was closed in layers with a continuous suture of chromic catgut No. 1 to approximate the edges of the pleura. The fascia and muscle layers were then approximated with chromic gut. Several interrupted silkworm gut sutures were also taken and the skin closed with horsehair.



a b

FIG. 10. Case XIII.

a. Roentgenogram after barium meal showing inverted stomach and intestines in the left chest.

b. Roentgenogram after barium enema showing herniated colon in left chest.

The temperature rose to 103.8 degrees early on the morning of the second postoperative day, but soon dropped to 99.8 and the chart remained normal thereafter. The wound healed rapidly and in

nine days the patient was up and about eating regular house diet. X-ray examination June 4, 1935 showed a small amount of fluid in the left chest. A chest tap, however, failed to obtain fluid. After discharge the boy's history was uneventful until June 17, about one month after operation. He complained of severe pain in the left chest. Four cc. of pus were drained from the wound and the pain quickly subsided. Since that time his temperature has remained normal and the child is enjoying a vacation at the seashore where he is quite cheerful and happy.

Contrary to the opinion now held by general practitioners and pediatrists that operation for congenital diaphragmatic hernia should not be undertaken before school age or until the child has reached adolescence or until symptoms of strangulation appear, we believe that operation should be done in the early weeks or months of life. The diaphragm, like any other muscular structure of the body, requires exercise for its development. Moreover, the activity of the normal diaphragm, like that of the heart, never ceases. Unlike other muscle structures of the body, it enjoys no rest periods, not even during sleep. Therefore when stalled by the contents of a hernia, symptoms of disturbed digestion, respiration, and circulation occur. As a consequence, we find these children underdeveloped and undernourished. A girl, aged four, now under observation at the hospital, gives a history of having gained only one pound in the last two years.

It is hoped that all cases operated upon will be reported. Case XII demonstrates that valuable lessons are often derived from careful investigation of the causes of failure.

The author wishes to acknowledge his indebtedness to members of the hospital staff who directly or indirectly have participated in the care of these patients or in the preparation of the written material and illustrations in this article. We are very much indebted to Dr. Albert H. Miller for a major service. He has originated and made practical application of a method of administering positive pressure anesthesia under gas-oxygen-ether without which our results could not have been achieved.

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PASTEUR AND KOCH SHOWED THE WAY

Of these two, only Koch was a physician; Pasteur being a chemist. Pasteur showed that fermentation and putrefaction were due to the action of living microörganisms reproduced from similar preëxisting forms. This discovery marked the end of the belief in the theory that germs of disease can develop spontaneously from non-living matter. Based on this, it was possible for these pioneers and others to demonstrate the relation of a microörganism to a specific infectious disease in man and animal.

Soon after Pasteur's remarkable discoveries, enthusiastic but uncritical workers claimed to have discovered the causative germs of many prevalent diseases, among them the "germs" of smallpox, scarlet, cancer, etc. Fortunately, Koch formulated four postulates which he insisted must be met before a germ can be accepted as the essential cause of a disease.

First, said Koch, in order to prove that a certain microbe is a cause of a certain disease it must always be associated with the disease. Secondly, we must completely isolate this microbe from the diseased organism and grow it outside the body in a pure culture. Thirdly, when a healthy susceptible animal is inoculated with this pure culture, the germ must always produce the disease. Fourthly, the germ should be recovered from the animal so infected, and grown in pure culture outside the body. It was the insistence on these postulates which permitted the establishment of bacteriology as a science.

The discoveries of these two men put public health on a scientific foundation. They gave a tremendous impetus to the study of germs and, together with others who followed, furnished exact knowledge concerning the causative agents of a number of important communicable diseases.

While many of the important theoretical contributions to the field of modern public health have come from England, France and Germany, many of them were first applied on a large scale in this country. Thus, antitoxin, while first produced in Europe, was perfected and applied in this country on a larger scale than anywhere else. The tubercle bacillus was discovered by Koch but the dramatization of this great discovery was made in America, so that Koch, on the occasion of his visit to the New York City Health Department in 1908 said, "Most of these bacteriological and serological discoveries have come from Germany. For my part I must admit with shame that we in Germany are years and years behind you in their practical application. You have done marvelous work." — *Neighborhood Health*, Vol. 1, No. 1. June-July, 1935.

The Massachusetts Medical Society

SECTION OF TUBERCULOSIS

Ball Room Assembly, Hotel Statler, Boston, June 5, 1935, 9 A.M.

PRESIDING:
Donald S. King, Boston, Chairman
Olin S. Pettingill, Middleton, Secretary.

CHAIRMAN KING: It is difficult to arrange every year an interesting program on one disease. In the past few years attention has been given to treatment, so this year we thought you would be interested in a symposium of Differential Diagnosis. As you will see we have had to call heavily on the roentgenologists, but this is natural in view of the fact that we are so dependent on the x-ray examination. Dr. Sosman has come from the Peter Bent Brigham Hospital to present the first subject, "Differential Diagnosis of Pulmonary Tuberculosis and Carcinoma."*

We will reserve discussion of the papers until the end of the Symposium, and go on to the second paper on "Differential Diagnosis of Pulmonary Tuberculosis and Abscess and Bronchiectasis."

*Not submitted for publication.

BRONCHOSCOPY AND THE DIFFERENTIAL DIAGNOSIS OF TUBERCULOSIS, LUNG ABSCESS, AND BRONCHIECTASIS*

BY G. ARNOLD RICE, M.D.†

A CAREFUL history and physical examination together with x-ray and laboratory examinations will in a great many cases suffice to make a diagnosis of tuberculosis and lung abscess. Regarding bronchiectasis it is necessary also to add bronchography. Demonstration of bronchiectatic cavities is best made bronchoscopically, for to instill lipiodol supraglottically may be said to be a hit or miss method as it is necessary in many cases to remove pus, granulation tissue and débris through the bronchoscope before instilling the lipiodol to obtain a more complete and true picture of the situation. It may also be necessary to inspect the bronchi and bronchial openings for stenosis, tumor or foreign body and in some instances to obtain a specimen for examination.

Occasionally there are cases where usual methods of diagnosis are somewhat uncertain and bronchoscopy is of value in making a more definite diagnosis. The following cases are illustrations:

CASE 1. Male, forty-nine years of age. Nine months before this picture was taken the patient began to have cough, but no hemoptysis, and expectoration was very little and consisted of white thin frothy material. He had progressive loss of weight and strength. For five weeks prior to our seeing him, he was in a neighboring general hospital. Numerous sputum examinations showed no tubercle bacilli. The patient left against advice with no diagnosis made and came to us for diagnostic bronchoscopy. This was done, a curved flexible tip aspirator was inserted in the right upper lobe bronchus and a few cc. of pus were aspirated. Direct smear showed numerous tubercle bacilli.

CASE 2. This patient was admitted to Rutland State Sanatorium in extremely poor condition. After study the staff at this institution decided that the patient had definite evidence of tuberculosis which at this time was not active and that she was suffering from something other than tuberculosis. Numerous sputum examinations showed no tubercle bacilli. In their opinion the clinical picture was more consistent with sepsis than tuberculosis. She was referred to us with a tentative diagnosis of bronchiectasis. Much pus was aspirated from the left lower lobe bronchi, then the bronchiectatic cavities seen here were filled with lipiodol. This picture taken about six weeks later shows definite evidence of active tuberculosis and at this time the sputum was positive for tuberculosis. This is a case of tuberculosis and bronchiectasis occurring in the same individual and at the time she was admitted to Rutland State Sanatorium she was suffering from sepsis due to blocked drainage of bronchiectatic cavities and later active tuberculosis.

CASE 3. The patient, seven years of age, has had no cough. General physical condition below par. A lung specialist was consulted for examination prior to tonsillectomy. The patient is a contact case, for the mother died of pulmonary tuberculosis. X-ray of chest had been taken in Boston nine months ago and a shadow was seen in first film at the time and no diagnosis was made from the film. Referred to us for diagnostic bronchoscopy. Flexible tip aspirator was passed into the right middle lobe bronchus and about 20 cc. of thick foul-smelling pus was aspirated. Direct smear showed spirilli, fusiform bacilli, streptococci and staphylococci, few gram negative diplococci and no tubercle bacilli. Guinea pig was inoculated. At this point evidence is strongly in favor of diagnosis of lung abscess. However, two weeks later the guinea pig died and autopsy showed it to be riddled with tuberculosis. A second film taken the same day shows increased ventilation of lung area involved.

CASE 4. A patient, twenty-two years of age, normal weight 117 pounds, had "the grippe" in September, 1933, with high temperature for two weeks and at the end of this time the skin of her entire body was desquamated. She was admitted to a general hospital April 20, 1934. Six weeks prior to this time she presented typical symp-

*Read at the Annual Meeting of the Massachusetts Medical Society, Section of Tuberculosis, June 5, 1935.

†Rice, G. Arnold—Bronchoscopist, Rutland State Sanatorium, Rutland, Mass. For record and address of author see "This Week's Issue," page 1202.

toms of hyperthyroidism, with weight on admission ninety-five pounds, basal metabolic rate plus 69 per cent, and the diagnosis of hyperthyroidism was made and she was put on Lugol's solution as preparation for thyroid operation. She was transferred to the surgical service on May 7, 1934 after giving consent to operation. On the same day, she began to run a temperature from normal, where it had remained since entering, to 101 degrees. Within three days the temperature was 105 degrees and she had developed cough. She remained very sick until the time of discharge, May 18, 1934. During this time, several x-rays were taken and no definite diagnosis was made by the roentgenologist. Two days prior to discharge she had a maculopapular pinkish rash, from ankles to neck; the consulting dermatologist was noncommittal. White counts from May seventh to eighteenth ranged from 6,500 to 7,250, differential counts normal, Widal test negative, stools negative, urine normal, tests for undulant fever and typhus fever negative, negative throat smears, Wassermann and Kahn tests negative. Blood culture showed no growth. The patient was discharged against advice with diagnosis of hyperthyroidism and dermatitis of unknown origin.

She entered another hospital August 7, 1934 after having remained at home desperately sick since May 18. After a few days' stay in this hospital, where sputum examination was reported negative for tubercle bacilli and diagnosis of tuberculosis was made from interpretation of x-rays, she was discharged unimproved; diagnosis hyperthyroidism and pulmonary tuberculosis. Referred to Holden District Hospital August 17, 1934 by Dr. William B. Davidson of Worcester with tentative diagnosis of hyperthyroidism and lung abscess, right upper lobe, and request for diagnostic bronchoscopy. Weight 78 pounds, temperature 102°, pulse 130, patient extremely thin and emaciated. Flexible tip curved aspirator inserted in right upper lobe bronchus and about 20 cc. thick, yellow foul-smelling pus was aspirated. Direct smear showed organisms usually found in lung abscess and no tubercle bacilli. Guinea pig was inoculated. More bronchoscopies were done on September 1, 30, and October 10. She appeared to receive a tremendous benefit from these bronchoscopic aspirations. By November, 1934, she was symptom free and had gained sixteen pounds. Guinea pigs inoculated with material obtained directly from the bronchus after each bronchoscopy, revealed no lesions of tuberculosis. Patient continued to gain in weight and strength and examination of May 15, 1935 showed her to feel perfectly well. Weight 123 pounds, six pounds more than her usual weight prior to her illness, basal metabolic rate plus 15 per cent. Diagnosis—Lung abscess, hyperthyroidism possibly due to sepsis. First film taken day before first bronchoscopy and the second about seven weeks later.

CASE 5. Patient twenty-one years of age had been an invalid for five years, much cough and profuse expectoration, four to five sputum boxes in twenty-four hours. Hemoptysis many times from few teaspoonfuls to twelve or fourteen ounces. Referred for diagnostic bronchoscopy. Plain film shows nothing definite. He had had some fifty sputum examinations, all negative for tubercle bacilli. Treated for tuberculosis in several localities. After aspirating about four ounces of thick, foul-smelling pus, cavities seen in this film were filled with lipiodol. Several specimens taken directly from the cavities at different intervals through the bronchoscope failed to show tubercle bacilli in direct smear, and no lesions of tuberculosis were found in inoculated guinea pigs. Diagnosis: Bronchiectasis.

CHAIRMAN KING: I am sure, as the program is proceeding you will realize there are difficulties in Differential Diagnosis, and I am glad that Dr. Lord is going to discuss this Symposium.

The third paper is by Dr. Zacks, on "Silicosis." * We have all encountered this problem of Differential Diagnosis.

I do not know how much Dr. Hampton knows about "Nontuberculous Fibrosis" today. Before he started to write this paper he thought he knew a good deal, but I understand that as the days have gone by he has become more and more discouraged. I shall be interested in knowing just what his present conclusions are.

*Not submitted for publication.

PROGRESSIVE IDIOPATHIC PULMONARY FIBROSIS ASSOCIATED WITH EMPHYSEMA*

BY AUBREY O. HAMPTON, M.D.†

AS the title of this paper indicates, we wish to discuss a series of cases of chronic pulmonary disease about which little is known. This presentation is a preliminary report of some work which your Chairman, Dr. Donald S. King, and I are pursuing. These cases are presented at this time because they are often misinterpreted as pulmonary tuberculosis. Various other clinical diagnoses are made such as asthma, bronchiectasis, heart disease, malignancy and pneumonoconiosis. In view of the confusing nature of these pulmonary diseases under discussion we will show only those cases which have had postmortem examinations. Unfortunately, even a complete pathological examination does not allow accurate classification but most of the postmortem findings are similar and are characterized by diffuse interstitial fibrosis, distortion and dilatation of the bronchi, diffuse emphysema and in the advanced cases emphysematous blebs.

The pulmonary changes seen at the routine x-ray examination which are due to idiopathic fibrosis are quite similar to those seen associated with tuberculosis. The chief difference is that usually tuberculosis is more localized and less likely to involve the entire lung fields. Fibrosis, however, may occur locally in both infra-

*Read at the Annual Meeting of the Massachusetts Medical Society, Section of Tuberculosis, June 5, 1935.

†Hampton, Aubrey O.—Assistant Roentgenologist, Massachusetts General Hospital. For record and address of author see "This Week's Issue," page 1202.

clavicular regions and as in the case of pneumonoconiosis the upper lobes are quite commonly involved. Emphysematous blebs add to the confusion of the x-ray picture, in that they are often quite similar to the cavitation of tuberculosis. Pleural thickening and even pleural effusion are also common. The thin walled dilated bronchi and confluent emphysematous alveoli which occur often produce a diffuse honeycombed appearance on the radiograph. This picture is rarely seen in tuberculosis, and there are certain other helpful differential points in the roentgen examination which are obtained only by fluoroscopy and oblique and lateral radiographs. In brief they are tabulated as follows:

IDIOPATHIC FIBROSIS	PULMONARY TUBERCULOSIS
1. Interstitial fibrosis usually diffuse but may begin in infraclavicular regions.	1. Fibrosis usually localized.
2. Progressive until death—3-30 years.	2. X-ray shadows may become less marked or disappear.
3. "Honey-combed" appearance of entire lung.	3. Rarely if ever "honey-combed".
4. Emphysema diffuse with cavities in apices, bases and anterior lung tips.	4. Emphysema localized and cavities usually central or posterior.
5. Cavities thin walled, usually multiple and mold to each other. Adjacent lung tissue likely to be clear.	5. Walls of cavities usually relatively thick, do not "mold" and adjacent lung tissue dense.
6. Cavities usually not demonstrated in posterior-anterior view of chest but strikingly plain in oblique and lateral views.	6. Cavities best demonstrated in routine posterior-anterior views.
7. Diaphragmatic outline and excursion usually abnormal. Rapid full downward excursion, slow shallow upward excursion. Heart, mediastinum, trachea and main bronchi may increase in size at sudden forced inspiration. Diaphragm symmetrically high if fibrosis predominates, low if emphysema is most marked.	7. Diaphragmatic outline may be abnormal but excursion usually fairly normal. Expiration and inspiration equal. No change in heart, trachea and mediastinum except shift to affected side. Position of diaphragm usually asymmetrical and varies, dependent upon the extent of the disease.

The clinical aspects of idiopathic pulmonary fibrosis may best be presented by the detailed report of a case history of a typical example, but before we present this case it might be well to compare the radiographic and pathological findings in the twelve cases we have collected.

G. C. (10391). A fifty-one year old housewife, admitted with complaint of bronchial asthma with wheezing and nocturnal dyspnea for twenty-six years. The past history revealed that the patient had had rheumatic fever thirty years before, which was not followed by any known sequelae. She had pneumonia in childhood and pleurisy at some indefinite time. The past history is otherwise irrelevant. At the age of fifteen, twenty-six years before entry, the patient began to have wheezing with difficult inspiration and expiration, dyspnea and nocturnal orthopnea. These symptoms persisted to the time of admission and gradually became more marked. The "asthma" was present the year around regardless of geographical location, although it was worse at some times than at others. Morphia was begun at onset and was occasionally used for some years. At the time of admission it was being used daily in doses of ½ grain with only partial relief.

Three years prior to entry the patient had frank hemoptysis on several occasions, severe night sweats, dyspnea and orthopnea, as well as persistent cough. A diagnosis of pulmonary tuberculosis with multiple abscesses was made and the patient was treated in a hospital for several months. At about this time the patient became aware of marked palpitation on exertion. This was accompanied by a dull precordial ache and marked cyanosis on exertion. Six weeks before entering the hospital the patient's ankles began to swell. For some time the swelling was general, but later a new type of swelling developed. The new type involved different parts of the body at various times, such as the feet, legs, thighs, back, abdomen and face. These swellings came up rapidly over a period of several hours. The swelling was red, sensitive and there was also a tingling sensation. Accompanying this new form of swelling was a steady, non-radiating, gnawing, moderately severe, mid-epigastric pain. This pain was unrelieved by food or soda and there was no gas, nausea or vomiting, or change in bowel habit. The patient was a semi-invalid for years and remained in bed for the past two months.

The family, marital, social and occupational histories are noncontributory. A physical examination revealed a chronically ill and apparently worried middle-aged female. There was marked dyspnea and orthopnea. The lips were cyanotic. Cervical veins were distended, the liver was very large and tender and there was massive pitting edema of the legs. The chest findings were interpreted as extensive pathology compatible with advanced tuberculosis.

Laboratory Findings: There were no significant findings in the blood, urine or sputum. The red cell count was 5.3 millions and the leukocyte count was 13.5 thousands. Many sputum examinations at two hospitals were negative for tubercle bacilli or other specific organisms.

Postmortem Examination by Dr. Tracy B. Mallory:

Pleural Cavity: Contains approximately 1 liter of straw-colored fluid. Both apices fairly adherent by means of thick, fibrous bands to the parietal pleura. Left lung is fastened throughout its length in the axillary line by fibrous bands.

Lungs: Except for lower portion of right lower lobe the whole anterior surface of the right lung is made up of emphysematous bullous blebs of various sizes, the largest blebs measuring 5 cm. in diameter. No blebs are seen in the left lung at this stage.

After removing the lungs from the chest the emphysematous blebs observed on the right are found to make up the middle portion of the upper and middle lobes, having covered the lateral portions when in situ. Small bullae are observed on the

(Slides were shown here.)

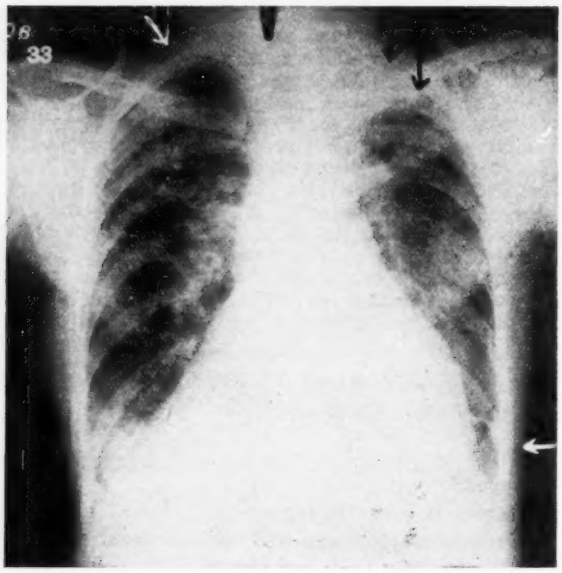

FIGURE 1a. G. C. 10391. The posterior anterior view demonstrates cavities in left apex and infraclavicular region closely resembling tuberculosis. The large thin-walled cavities in the right apex and at the left base are more typical of emphysematous blebs. The heart is markedly enlarged and the mottling in both lung fields is due chiefly to fibrosis. There is some fluid at both bases.

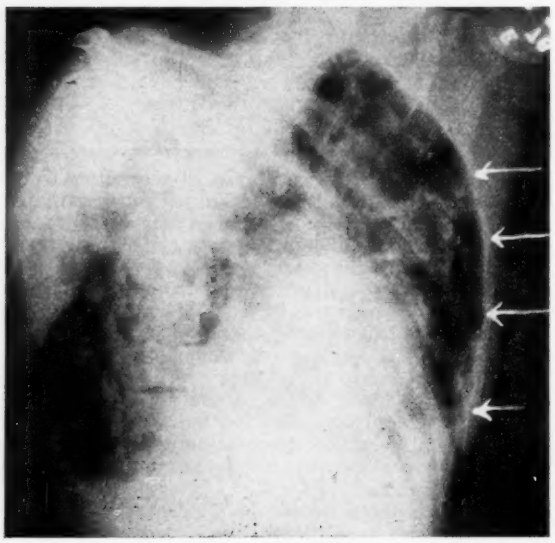

FIGURE 1b. G. C. 10391. In the left oblique view numerous large blebs are demonstrated in the anterior margin of the right lung. These shadows are not seen in figure 1a because of their location and physical characteristics. The walls of these cavities are thin and mold to each other.

diaphragmatic surface of the left lung. Both upper lobes are moderately firm, grayish blue, and on cut section show moderate fibrosis with cavitation on the left side, the largest cavity measuring 1 cm. in diameter. No cavities are present on the right side. All the interlobar spaces are obliterated by fibrous adhesions. The rest of the lung tissue is very slightly crepitant and dark grayish blue in color.

Microscopic: Study of ninety sections from varying areas of all four lobes presents a very complicated picture. Emphysema with enlargement of alveolar sacs up to 2-3 mm. is present in all lobes, but is most marked in the two upper lobes, where sacs 0.5 cm. in diameter are numerous, and less marked in the right lower lobe. Also scattered throughout all lobes, approximately in proportion to the amount of emphysema, are focal scars, varying from 1 mm. to 2.5 cm. in diameter, the majority averaging 2-4 mm. With the elastic tissue stain it is evident that these consist of completely collapsed alveoli with collagenous obliteration of their lumina. A scar 2 mm. in diameter shows the obliterated shadows of 40-50 alveoli, so that marked focal shrinkage of the pulmonary parenchyma must have occurred with corresponding "Raum verschiebungen" (Loeschke), and *nowhere in the lungs are any lesions suggestive of tuberculosis found.* In general, emphysematous dilatation of the alveoli is most marked in the immediate neighborhood of the areas of scar tissue. Throughout the lung there is no diminution in the elastic tissue, except in the walls of the largest scars. For the most part, even in definitely emphysematous alveoli, it appears increased rather than diminished.

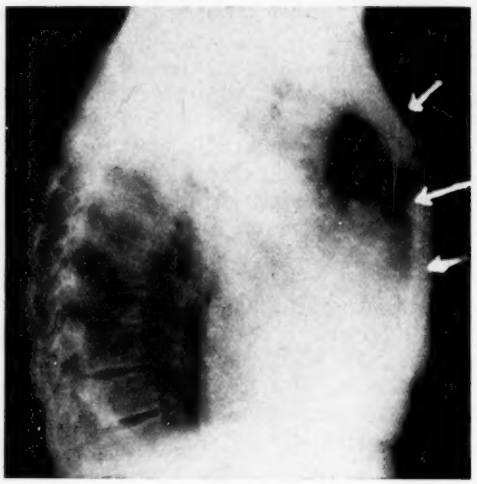

FIGURE 1C G. C. 10391. In the lateral view, the substernal area is seen to be composed of numerous superimposed large and small blebs. The anteroposterior diameter of the chest is above normal.

The bronchi show a definite narrowing of their lumina. This is most marked in bronchi from 2-7 mm. in external diameter, where the lumen is 35 per cent of the external diameter (normal 50 per cent). The bronchioles below 2 mm. in diameter show no narrowing, and in fact, are frequently somewhat dilated. Only in one area in the left upper lobe is significant dilatation of larger bronchi noted. In these bronchi the muscle tissue is greatly diminished and in a few sections is almost totally absent. The muscularis of the remainder of the bronchi throughout all lobes is notably increased in thickness, running from two to three times normal and corresponding with the findings in paroxysmal asthmatic deaths. The bronchi down to 2 mm. in diameter are for the most part free from exudate, though the bronchioles fairly uniformly contain mucus, and frequently large numbers of polymorphonuclear leukocytes and epithelial cells of the larger bronchi show only a low proportion of goblet cells, though the mucous glands of the submucous layer are unusually large, their ducts dilated, and a high percentage of cells active. However, the secretion within the cells and in the ducts is of a thin, apparently watery, consistency, *quite different from the marked*

ly basophilic secretion of the usual asthma case. The epithelial basement membrane is irregular in thickness, for the most part showing only slight increase in width and moderate hyalinization, but in some bronchi, the thickening is of extremely marked degree. Eosinophilic infiltration is entirely lacking. Lymphocyte and plasma cell infiltration is present in relatively slight degree in the subepithelial tissues, more marked but still not intense in the stroma of the glands. A slight diffuse edema of the bronchial tissues is present. A marked brown pigmentation of the bronchial cartilage is noted. The arteries of all sizes show marked changes. In the larger elastic arteries atheromatous deposits are present, but relatively subordinated to a very marked fibrous intimal thickening, which is rarely absent in any section, and often is great enough to reduce the calibre of a vessel by fifty per cent. Leading from the elastic arteries are arteries of muscular type, typical of systemic vessels rather than of pulmonary ones in their well-developed muscularis. Finally, the arterioles show a uniform thickening of their walls with intimal proliferation and some degree of hyalinization. The veins are not abnormal.

Heart: Weighs 400 grams. There is marked hypertrophy in the right ventricle, the wall measuring 14 mm. The left wall measures 10 mm.

CHAIRMAN KING: We have to arrange for a Nominating Committee, and may I ask that the Committee sometime in the next half hour nominate the officers for the ensuing year.

The next paper which we have is entitled, "Mycotic Infection of the Lungs in the Differential Diagnosis of Pulmonary Tuberculosis," by Dr. Bakst.

MYCOTIC INFECTION OF THE LUNGS IN THE DIFFERENTIAL DIAGNOSIS OF PULMONARY TUBERCULOSIS*

BY HENRY J. BAKST, M.D.†

DESPITE the fact that fungi have been recognized as organisms pathogenic to man since the latter half of the nineteenth century, their incident diseases form a general group of ill-defined and poorly recognized clinical entities over which considerable confusion and controversy still exist. Much of the difficulty is unquestionably due to the ability of the various fungi to cause pathological changes which are practically indistinguishable from those of bacterial origin, particularly tuberculosis. A fair portion of the responsibility, however, is also due to inadequate mycological study. It is to be expected that with the more widespread recognition of the importance of fungi as the causative factors of disease, sufficient interest will be awakened to necessitate the development of a more simplified groundwork for the support of clinical observation.

In the course of any confusing clinical investigation a return to fundamental principles of observation invariably results in a clarified view of what has previously been vague and complex. In our consideration of the pulmonary mycoses, let us discard for a moment, the complex terminology, and widen our focus from a narrow view of the pulmonary pathology to a broad consideration of the patient as a whole. This will present a series of fundamental clinical pictures which, we hope, will be of considerable aid in the differential diagnosis of pulmonary tuberculosis.

In order to differentiate these conditions on a clinically practical basis, a classification proposed by Watkins a few years ago is utilized[1]. The fungi are divided into three groups. The first group consists of the filamentous forms; the second is made up of the yeast-like organisms, and the third represents the more complex types.

In the first group we have such organisms as actinomyces, cohnistreptothrix, vibriothrix, cladothrix, leptothrix, and anaeromyces. Since this group has been demonstrated as being biologically related to the tubercle bacillus[2, 3], it is not surprising that they should produce a disease which is practically indistinguishable from tuberculosis. This is particularly true of the streptothrix which stains with a variable degree of acid-fastness and produces a disease picture which is essentially pulmonary in nature.

If we may accept pulmonary actinomycosis as the disease characteristic of the first group, a clear differentiation of it and pulmonary tuberculosis may be drawn.

Our patient may present the familiar picture of loss of weight, cough, hemoptysis, night sweats and fever. The mycotic infection, however, usually involves the basal or hilar portions of the lung[4, 5]. Cavity formation is much less marked than in tuberculosis and abscess formation is a frequent finding. In its tendency to spread by contiguity, with marked fibrosis and disregard of anatomical boundaries, the process may at times resemble a neoplasm rather than tuberculosis[6]. The lesion often spreads through the diaphragm, and over 80 per cent of the cases show the presence of a sinus draining through the anterior chest wall. Persistent chest pain is almost an invariable symptom. More than half the cases have a cutaneous lesion, and the lymph nodes are rarely involved. A slight to moderate leukocytosis is frequently present[4]. Definite proof of the etiological factors of the disease process is obtained by microscopic examination of the pinhead sized yellow, or so-called sulphur gran-

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ules, present in the sputum or pus. With actinomycosis, a gram stain will demonstrate the presence of a tangled mass of blue threads surrounded by red clubbed ends[5]. A Ziehl-Neelsen stain, in the case of streptothrix, will reveal a loose network of filaments of variable acid-fastness sometimes presenting a granular appearance[2, 3].

The yeast-like organisms included in the second group consist of those which reproduce by means of thallospores, such as blastomycosis, torula, monilia, oidium and oospora, and those which reproduce by means of ascospores such as saccharomyces, willia, endomyces and coccidioides.

The characteristic features produced by the blastomyces have been adequately described by Stober[7] and Wilhelmj[8]. Their observations showed it to be a disease primarily affecting young adults subject to exposure, or employed in manual labor. The symptoms of loss of weight, cough, purulent (often bloody) sputum, and chest pain almost always date from a history of upper respiratory infection[9]. The outstanding features are those of pyemia with irregular fever, chills, and sweats[8]. The skin and subcutaneous tissues are often excessively undermined by large abscesses. Most important is the realization of the fact that 95 per cent of the cases show evidence of skin involvement which may vary from small pustules to large abscesses which break down to form chronic granulomatous lesions[8]. Bone and joint destruction has been found to occur in over two thirds of the cases, and may be expected to take place in almost any part of the skeletal system[10]. Over one third of the cases may show evidence of kidney involvement[8]. A blood examination will usually reveal the presence of a moderate leukocytosis[9].

It is obvious that the diagnosis of blastomycosis should be considered[7] in any patient presenting the triad of chronic pulmonary, bone, and skin lesions.

The addition of 10 per cent sodium hydroxide to the pus or sputum, examined freshly, will demonstrate the presence of yeast-like budding forms 10 to 30 micra in diameter with doubly-refractile contours[11].

Coccidioidal granuloma gives rise to a clinical picture practically identical with that of blastomycosis[12]. It occurs primarily on the west coast[13]. The cutaneous lesions show a greater tendency toward ulceration, and more marked lymph node involvement occurs. The presence of suppurative orchitis is considered to be a diagnostic lesion by Cummins who reviewed the 200 deaths resulting from this disease between the years 1892 and 1929[13]. Since inoculated guinea pigs show early evidence of involvement, this predilection for testicular tissue provides a valuable diagnostic measure[14].

Recently at the Boston City Hospital we have had the opportunity to observe several cases of pulmonary infection associated with monilia[15], a disease originally described by Castellani in his observations on "tea taster's cough" in Ceylon[16]. Unfortunately moniliasis has not, as yet, been generally accepted as a cause of primary pulmonary disease. This is probably due to the frequent occurrence of monilia as a secondary invader, and also, to a lack of adequate investigation of that group of cases of tuberculosis in whom the presence of acid-fast bacilli is never demonstrated. Because of the lack of an adequate number of reported cases, it is difficult to gather information which will allow differentiation of this disease and tuberculosis on a purely clinical basis. Aside from the fact that the pulmonary lesions occur, as a rule, at the base of the lung, and tend to leave the apices clear, little can be said to distinguish it from an acid-fast process. It is a diagnosis which must rest chiefly on the adequate demonstration of these organisms in the sputum, and the persistent absence of acid-fast bacilli, together with evidence of their pathogenicity.

The third group of mycoses consists of the more complex fungi such as aspergillus, penicillium, acremoniella, mucor, rhizomucor, lichtheimia, sporotrichum and alcadium. Here again we are dealing with a group which is probably most frequently found in the capacity of a secondary invader. Here also, we must depend on the demonstration of the organisms in the absence of acid-fast bacilli. A case followed in France for twenty-seven years with clinical tuberculosis, but with acid-fast bacilli absent from the sputum persistently showed the presence of aspergillus[17]. Another similar case, studied for ten years, showed the invariable presence of penicillium in the sputum[18].

Therefore, to summarize briefly, we must recognize in distinguishing mycotic infections from tuberculosis, the necessity for a consideration of the patient as a whole. Confusion will invariably result from a point of view which is narrowly focussed on the presence of pulmonary pathology. The atypical location of the pulmonary lesion, a discharging sinus in the chest or neck, the concomitant presence of dermal or joint lesions should invariably lead to a suspicion of mycotic infection. Proof, however, must depend on the actual demonstration of the organisms in the sputum or pus.

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CHAIRMAN KING: The final paper is by Dr. Paul D. White on "The Differential Diagnosis of Pulmonary Tuberculosis and Pulmonary Circulating Changes."

THE DIFFERENTIAL DIAGNOSIS OF PULMONARY TUBERCULOSIS AND PULMONARY CIRCULATORY CHANGES*

BY PAUL D. WHITE, M.D.†

ON April 10, 1934, a coal miner twenty-five years old, was admitted to the Heathfield Sanatorium in Scotland for observation. The history of the case presented by Drs. James Grant and John Miller of Ayr was as follows:

There had been excellent health until a cough developed in January, three months earlier.

"Gradually some dyspnea on exertion became apparent in the following months, but he was able to walk about. On April 3rd he suffered from acute hemoptysis of bright red blood, and his medical attendant had his chest examined by x-rays the following day, and sent him with the film to the tuberculosis dispensary.

"The patient at examination on April 5th was a healthy-looking vigorous adult with a slightly pale countenance. He was a little feverish, the temperature being 98.9° F. and the pulse rate 96. Apart from some crepitations in the left axilla, system examination revealed no abnormality. The skiagram of the chest showed rather a large heart shadow, with increased density of lung shadow in the midzone of the left lung. Sputum examination failed to reveal tubercle bacilli. The family history was good, all near relatives being alive and well."

Under observation during the next few months he remained free of fever except for a few days in August when he showed dullness and pleural friction rub at the left lung base. For months he raised sputum daily, at times blood-tinged. His heart increased in size and a systolic murmur appeared at the apex.

"On August 28th the patient began to go downhill. He expectorated blood in the sputum, at first a tinge only, but later copious quantities of bluish-red frothy blood. The skin and conjunctivae became jaundiced, cyanosis was very evident, and the liver enlarged and was painful. The heart dullness was much enlarged in all directions, the apex beat being scarcely perceptible and the cardiac sounds of very poor quality. A further x-ray examination was made the following day. The film of the chest showed a colossal increase in size of the heart shadow, and an upward bulging of the liver shadow. Two days later there was slight anasarca, and the blood pressure was 70/64. The urine revealed no abnormal constituents in solution or suspension, a feature maintained throughout; the Wassermann reaction was not done.

"The patient began then to complain of strangulation, and on account of a tentative diagnosis of pericardial effusion an attempt was made on September 2nd to perform paracentesis of the pericardium. No fluid was obtained, but owing to the evident distress of the patient the attempt was not persisted in. Thereafter the patient became more dropsical, cyanosed, and breathless, and died fairly suddenly on September 6th."

Postmortem examination revealed generalized edema, double hydrothorax, a small pericardial effusion of 6 to 8 ounces, no tuberculosis, extreme chronic venous congestion (brown induration) of the lungs, a somewhat enlarged liver with the characteristic nutmeg appearance of chronic congestion, and a markedly dilated heart with normal valves, but atheromatous occlusion of the anterior descending branch of the left coronary artery with a large fibrosed atrophied area (infarction) in the anterior apical portion of the left ventricular myocardium with partially organized laminated clot attached to it inside the ventricle.

Such a mistake in diagnosis should of course not be made. Fortunately such a mistake cannot be made often because of the great rarity under the age of thirty years and even under the age of forty years of serious coronary disease with thrombosis followed by extensive myocardial infarction and left ventricular failure with pulmonary vascular congestion. Except for the age of the patient the clinical picture is, however, quite common, that is, pulmonary edema in acute or chronic form with or without the raising of blood, secondary to left ventricular failure due to coronary thrombosis. The more important points of differentiation from pulmonary tuberculosis are the following: (1) a history, as a rule, of severe prolonged sub-

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sternal pain, usually requiring morphine, at some time in the recent past, with or without a history of antecedent angina pectoris, (2) enlargement of the heart (the heart always becomes enlarged after coronary thrombosis before it fails), (3) a characteristically abnormal electrocardiogram pointing to recent coronary thrombosis—a very important sign, (4) x-ray evidence of engorgement of the blood vessels of the lung hiluses with or without engorgement of the smaller vessels extending radially toward the lung periphery, without more extensive involvement of the lung apices (there may be clouding due to pulmonary edema in severe acute attacks of left heart failure) and (5) the preponderance of moist râles at the lung bases if such râles are present—asthmatic breathing with scattered squeaks and groans may be present also when there is an associated cardiac asthma.

Pulmonary vascular congestion from failure of the left ventricle may complicate other types of heart disease besides that resulting from coronary artery obstruction. Most commonly hyperpiesia, or essential hypertension, is the factor behind left ventricular failure in most of the United States of America. The clues that differentiate such a cause of pulmonary edema and phthisis are (1) the history of a considerable degree of high blood pressure over a considerable length of time in a middle-aged or elderly person, (2) the story of dyspnea on effort for at least a few weeks, and frequently of attacks of paroxysmal dyspnea or cardiac asthma, especially at night, (3) the finding of cardiac enlargement, (4) the frequent finding of other special signs of left ventricular weakness, such as gallop rhythm, accentuation of the pulmonary second sound, and alternation of the pulse, (5) the x-ray picture of pulmonary vascular engorgement, and (6) the preponderance of moist râles at the lung bases, if there are any moist râles.

Other occasional causes of left ventricular strain and failure that may give rise to pulmonary vascular congestion are aortic valve disease (stenosis or regurgitation or both) whose presence is indicated by characteristic murmurs, luetic aortitis acting either by narrowing the mouths of the coronary arteries or by producing aortic regurgitation, and acute rheumatic myocarditis in childhood evident as an infectious process causing cardiac enlargement. Incidentally an interesting complication of a very severe acute rheumatic infection may be a hemorrhagic consolidation of the lung. Rarely "pure" mitral regurgitation and coarctation of the aorta may be important factors of strain.

There are three other cardiac conditions besides that of left ventricular failure that may simulate pulmonary tuberculosis in occasional cases. Usually the differential diagnosis is easy and mistakes should be avoided without much difficulty in every case. These three conditions are mitral stenosis with hemoptysis, aortic aneurysm with pressure symptoms, especially cough, and congenital anomalies, particularly interauricular septal defect with marked dilatation of the pulmonary blood vessels.

Mitral stenosis should be easily distinguished by the finding of its characteristic apical mid-diastolic murmur with or without presystolic accentuation or thrill, but this murmur is often missed by a hasty or inexperienced observer who doesn't happen to listen exactly at the cardiac apex where the murmur is often localized. Useful aids in the rapid detection of the murmur are the use of the bell chest-piece of the stethoscope and auscultation with the patient supine or lying on the left side directly after exercise. Another helpful finding is the so-called mitral shape of the heart by x-ray.

Only rarely does the patient with mitral stenosis cough up blood and only very rarely any considerable amount of blood. When such an event occurs, however, there is a danger of confusion of the condition with phthisis, and first and last a considerable number of patients with mitral stenosis have been treated in sanatoria for tuberculosis. Infrequently phthisis and mitral stenosis occur together in the same case.

Aortic aneurysm may be easily missed without an x-ray. In most cases the Wassermann and Hinton reactions are positive and the subjects are usually men of middle age.

Wide open congenital auricular septal defects are fortunately rare. They give rise to great enlargement of the right heart chambers and massive engorgement of the lung hilus shadows which may be taken for enlarged glands or tumors.

Finally, a word is to be said concerning pulmonary vascular disease not necessarily associated with heart disease. The commonest is thrombosis or embolism with infarction, an acute lesion occurring as a rule as a complication of surgical convalescence or heart failure and difficult to confuse with pulmonary tuberculosis. Sudden chest pain or oppression or dyspnea, often a temporary state of shock, fever, leukocytosis, secondary dilatation of the right ventricle if the obstruction is extensive, pleurisy, and eventually signs of the pulmonary infarct by physical examination or x-ray distinguish pulmonary embolism or thrombosis in most cases. Rarely the thrombosis may be slow in its development, insidious, and difficult to diagnose, especially if it is a terminal event. In any case the blood spitting is only incidental.

A rare type of pulmonary vascular disease is endarteritis obliterans, of unknown cause, resulting eventually in enlargement of the pulmonary vessels and of the right heart chambers and

if extensive, cyanosis. It does not cause hemoptysis. The congestive heart failure if it supervenes is right ventricular, and not shown in the pulmonary circulation. Pulmonary arterial aneurysms are excessively rare and so far as I know have not been confused with phthisis.

Thus, in summary, there are rare cases of pulmonary vascular congestion due to left ventricular failure, of mitral stenosis with hemoptysis, and of aortic aneurysm with cough, that may on first glance be confused with pulmonary tuberculosis, but careful study should easily distinguish them in every case.

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CHAIRMAN KING: Dr. Lord has prepared a summary of this Symposium for you.

THE DIFFERENTIAL DIAGNOSIS OF PULMONARY TUBERCULOSIS*

BY FREDERICK T. LORD, M.D.†

MUCH progress has been made in the diagnosis of pulmonary tuberculosis. This is due largely to the development of x-ray technique and a more complete understanding of the clinical aspects of the disease and of the conditions with which it may be confused. Occasional mistakes in diagnosis are inevitable, but their number may be reduced by complete investigation. In discussing the differential diagnosis I would emphasize the importance of the following considerations:

A family history of contact with tuberculosis or other opportunity for contagion may have an important bearing on the diagnosis in doubtful cases.

A past or present history of hemoptysis out of a clear sky is especially suggestive of pulmonary tuberculosis. Exceptions to the tuberculous origin of the bleeding in this group are for the most part due to malignant disease of the bronchi or lung. Though hemoptysis is common in patients with bronchiectasis, I have seen but one instance in which the bleeding was an initial symptom. Other rare causes are the rupture of tuberculous or anthracotic glands into the air passages, and syphilis of the trachea and bronchi. Echinococcus disease and Distoma Ringeri may also be responsible.

Primary pleurisy with or without an effusion is equal in significance to hemoptysis out of a clear sky in suggesting tuberculosis as a cause. In this group also, malignant disease may be a cause of confusion. Primary endothelioma of the pleura is much less common than an apparently primary pleurisy arising by extension from a latent bronchial or pulmonary neoplasm. Examination after fixation and section of the sediment of the pleural fluid obtained after centrifuging may permit a diagnosis of malignant disease. Pulmonary infarction from latent thrombophlebitis may also cause an apparently primary pleurisy but its occurrence after operation, delivery, or trauma, may serve to suggest this possibility.

Following occupational exposure to silicious dust the diagnosis of pneumonoconiosis is not difficult, but tuberculosis develops sooner or later in a large proportion of the cases and recognition of the two diseases combined may be difficult or impossible.

The necessity for repeated examinations of the sputum for tubercle bacilli and other organisms is obvious. I would call attention to the diagnostic importance of the odor of specimens. Expectorated material with uncomplicated tuberculosis is without odor. In the presence of bronchiectasis there is a stale or musty odor in about half the cases. With lung abscess the odor is foul with few exceptions.

The use of tuberculin as a method of screening is of especial value in youth. The diagnostic importance of positive tests diminishes as age advances. The von Pirquet test is subject to an error of about ten per cent, and the test can be regarded as negative only when the intracutaneous method is used with increasing doses up to and including the injection of one milligram of tuberculin.

The leucocyte count has considerable value in differential diagnosis because of the usual absence of leucocytosis in uncomplicated tuberculosis and the abnormal elevation of the polynuclear leucocytes with nontuberculous infection.

Careful attention to the clinical aspects is obviously of importance in differential diagnosis. Primary pulmonary tuberculosis is common in children, but may also occur in adults. Diffuse or nodular primary lesions may be located anywhere in the lung and are associated with tracheobronchial glandular enlargement. The onset is insidious, the tuberculin test positive and leucocytosis absent. The outlook is good. There is no significant destruction of tissue. Resolution is slow leaving calcified areas and fibrosis. In this group the principal difficulty is the distinction of such lesion from acute broncho- and lobar pneumonia in which, how-

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ever, the onset is stormy, the tuberculin test in children may be negative and there is usually a leucocytosis. Resolution is relatively rapid in favorable cases and calcification in the involved regions does not occur.

Of secondary infections with the tubercle bacillus, acute pneumonic phthisis rarely observed, may simulate acute pneumococcus lobar pneumonia. The differentiation is especially important in view of the value of early specific treatment of certain types of pneumococcus infection. In contrast to pneumonic phthisis, pneumococcus lobar pneumonia usually occurs in previously healthy individuals. The onset is more explosive, with shaking chill, rapid elevation of temperature, cough with tenacious rusty sputum and pain in the side. The finding of Type I or II pneumococci in the sputum speaks for pneumococcus lobar pneumonia. This complex of initial symptoms is seldom complete with acute pneumonic phthisis. Chill and pain are less common. Though rusty sputum may occur, greenish expectoration is more common. Hemoptysis may be an initial symptom. Pallor, rather than cyanosis, unusual irregularity in the temperature curve, remittent or intermittent fever, failure to become afebrile at the expected time, absence of leucocytosis, and physical and x-ray evidence of apical or subapical involvement in addition to consolidation elsewhere are suggestive features. The sputum is usually positive for tubercle bacilli.

With respect to the common or chronic ulcerative form of pulmonary tuberculosis, failure of early diagnosis is largely due to a long, latent period during which there are no significant symptoms or signs. In this period the disease can be recognized only by x-ray examination, and the most effective method of case-finding would be to investigate all members of the population and failing in this to select readily available groups or those with more than the average chance of the disease. The routine examination of school children as now carried out in Massachusetts, of school teachers, nurses in hospitals and diabetics will in part help to solve the problem of the early diagnosis of the disease.

With the progress of pulmonary tuberculosis beyond the latent period, there is a fairly uniform evolution and grouping of symptoms. Attention to this complex furnishes important evidence for or against tuberculosis. Our understanding of the clinical course of pulmonary tuberculosis and of the diseases with which it may be confused is constantly improving with corresponding reduction in the frequency of mistakes in diagnosis.

The value of physical signs lags far behind the value of the x-ray in the recognition of pulmonary tuberculosis and of the diseases with which it may be confused. Even with the greatest care in the performance of physical examination inevitable failures are not uncommon in the detection and interpretation of pulmonary lesions when dependence is placed on this method alone. Physical signs may be absent with early active and with indolent and deep-seated tuberculous lesions. On the other hand, persistent fine or medium moist râles in certain regions may give added significance to otherwise doubtful shadows in the x-ray film. Roentgen-ray investigation has shown that physical signs alone may fail to demonstrate a small pneumothorax and may not serve to distinguish it from obstruction emphysema. Obstruction atelectasis is one of few bronchopulmonary conditions in which the diagnostic value of physical signs exceeds that of the x-ray. Though the x-ray is important in establishing the presence of atelectasis, it cannot be expected alone to furnish evidence sufficient to determine whether the bronchus leading to the affected region is open or closed if the cause of the bronchostenosis is opaque to the x-ray. Physical signs are of greater value than the x-ray in the decision regarding the desirability of bronchoscopy or its repetition.

The x-ray is indispensable in the early diagnosis of pulmonary tuberculosis and in the distinction between the disease and the conditions with which it may be confused. The importance in selected cases of anteroposterior views at the end of full inspiration and of full expiration, of films taken in the profile position and of posture to facilitate the demonstration of fluid and fluid levels must be appreciated. Fine or coarse mottled increase of density above the anterior portion of the third rib is seldom due to other causes than tuberculosis. When the clinical aspects and the x-ray are both consistent with this disease, the diagnosis can be made with little chance of error. In doubtful cases, serial roentgenograms help in the decision, as shadows due to tuberculosis change only slowly or not at all.

Of special methods of investigation, the use of lipiodol is in general seldom necessary. It is, however, of great value in establishing the diagnosis of bronchiectasis and of occasional assistance in the more accurate localization of lung abscess. It may be helpful in the diagnosis of bronchostenosis, but here bronchoscopy is usually preferable in view of the added possibility by this means of determining the nature of the obstruction. The instillation of lipiodol into the trachea below the vocal cords after evacuation by postural drainage usually gives as satisfactory results as bronchoscopic introduction. Bronchoscopy should be considered in all cases with localized pulmonary suppuration and is indicated in selected cases with symptoms or signs suggesting the possibility of malignant disease or foreign body.

DISCUSSION

CHAIRMAN KING: Before we proceed with the discussion, I will ask that the members taking part give their names to the Secretary.

SPEAKER FROM THE FLOOR: I would like to ask Dr. White whether he has seen bleeding in cases of arteriosclerosis, as such, involving pulmonary vessels. We have learned to think of that possibility with cerebral vessels, but we don't think of bleeding as a possibility in arteriosclerotic conditions in every case, such as the lungs, stomach and kidneys.

CHAIRMAN KING: Dr. White, do you wish to answer the question?

DR. PAUL D. WHITE: Bleeding from the lungs occurs in only a few cases of heart disease, namely those in which the pulmonary arterial pressure is very high, as in mitral stenosis and in acute pulmonary congestion associated with failure of the left ventricle. Pulmonary apoplexy is a name that has been given to a moderately large pulmonary hemorrhage in mitral stenosis; it has at times resulted in an erroneous diagnosis of phthisis. Pulmonary arteriosclerosis may complicate these conditions mentioned above, but so far as I know pulmonary arteriosclerosis does not alone give rise to bleeding from the lungs.

DR. H. ALLAN NOVACK: I would like to say just a word in regard to blood findings, as I have been interested in tuberculosis for some years. It is true that in a pure, uncomplicated case of pulmonary tuberculosis you do get a relatively low white count in comparison with the average tubercular infection, but it is only in the very early stage of pulmonary tuberculosis that the disease is usually uncomplicated, but very soon after that secondary invasion with pyogenic organisms takes place and there is an increase to twelve or fourteen or even fifteen thousand white cells. Also, there is a marked increase in the polymorphonuclear neutrophile percentage.

CHAIRMAN KING: Is there further discussion?

DR. M. P. RINDGE, Madison, Connecticut: I would like to ask Dr. Bakst what the results were in cases of moniliasis.

DR. HENRY J. BAKST: Originally we reported three cases of pulmonary infection associated with monilia in the sputum. Subsequent to that we have seen two or three other cases which showed evidence of a similar infection. In no instance did the clinical picture suggest a deficiency disease. By and large it was clearly a picture of infection. The problem in each case was to rule out tuberculosis or bronchopneumonia. All of our primary cases recovered.

DR. WHITE: I would like to emphasize once more that in a great majority of cardiac patients, the first evidence of failure is pulmonary, and the increase in systemic venous pressure with dependent edema comes later.

CHAIRMAN KING: Is there any further discussion? (There being no further discussion, the session adjourned.)

TEACHING HEALTH

BY H. E. KLEINSCHMIDT, M.D.,
Director of Health Education,
National Tuberculosis Association

Much has been written and spoken about the relative values of the eye and the ear as a means of learning. One enthusiast insists that 90 per cent of what people know has been acquired through the sense of sight. John Dewey puts the matter more discriminatingly. "The eye," he says, "is superior to the ear with respect to the understanding of physical and technical matters. But in all social matters the mass of the people are guided through hearing rather than by sight."

Health education aims to influence the behavior and conduct of people. This is a "social matter". But conduct is based largely on an "understanding of physical matters". Impulses that move people to action may be generated through a clever emotional appeal, but if the impulses are rooted in an intelligent concept, decisions and actions will be more substantial and reasonable.

In every clinic or health center, the opportunity of teaching through the eye should be capitalized. One of the best methods is the use of the exhibit. While people are waiting or visiting is the time to impress them with the tangible facts about health. Exhibits should be attractive to the eye, shorn of all complications and aimed sharply at one idea. Motion often helps to capture and hold attention. Three dimensional displays are, generally speaking, better than flat placards. Vivid color and striking form command attention. But these mechanical considerations are really secondary. What is essential is that the exhibit should convey quickly and without effort a definite concept. Study the idea you wish to convey, simplify it and try to express it graphically so that he who runs may read and he who sits long and patiently will not be bored.—*Neighborhood Health*, Vol. 1, No. 2. August-September, 1935.

CAPTAINS OF DEATH

According to the statistical evidence accumulated by Dr. Donald B. Armstrong, third vice-president of the Metropolitan Life Insurance Company, the leading causes of death in 1934 with their rates per 100,000 for all ages are as follows:

1. Heart disease 1627 per 100,000.
2. Cancer 96 per 100,000.
3. Pneumonia (all forms) 65.0 per 100,000.
4. Chronic nephritis 64.8 per 100,000.
5. Cerebral hemorrhage 62.2 per 100,000.
6. Tuberculosis (all forms) 59.3 per 100,000.
7. Accidents (all forms) 57.8 per 100,000.

It can be readily seen that this list of diseases represents problems which are essentially medical, and further advances will depend upon the activities of health agencies and practitioners. Accidents, however, are ordinarily quite outside the responsibility of the medical profession and lower death rates will depend on the intelligence and ordinary care of the public.

Dr. Armstrong's article was published in *Better Health*, August, 1935.

ADDRESS OF DR. DAVID L. EDSALL*

MY mind goes back more than twenty-five years to an evening when the Pathological Society of Philadelphia held a celebration of its fiftieth anniversary. After the dinner where there had been a number of excellent speeches, Dr. Abraham Jacobi sat with a group of us younger men who were very devoted to him, and spoke with warm approval of the speakers and their ease in after-dinner speaking. He said that all his life he had been afflicted with stage fright, but in the past two years it seemed to be disappearing. He was eighty-one at the time. I thought then what hard luck it was for me to look forward to over forty years of stage fright, but I am quite sure, even if I reach more than seventy-nine years, I should not be able to respond in a calm and adequate way to the kind things, the over-generous things, that I have heard said this afternoon and tonight.

My mind goes back also to twenty-three years ago when I came here. I had just gone through two attempts, in two different cities, at rather radical efforts at progress. Both were largely failures. It was, probably, in part due to mistakes but partly bad luck. I felt, however, very conscious of Napoleon's statement that any one who has been repeatedly unlucky is a poor person to put in charge of things because his previous experience destroys the morale of the organization he has charge of. When I came here I thought people might be suspicious of my personal capacity in carrying anything out when I had had such luck before. I also had in my thoughts the feeling I had always heard, as an outsider, that this was a cold and critical community and very unfriendly to outsiders. Indeed, one very distinguished person, when I was called here, advised me not to "put my head in the lion's mouth." I came and found totally contrary conditions to what I had expected. A year after I came here I was talking over things with a friend who had been in one of the earlier unsuccessful ventures. He asked me many questions and finally said, "With your previous experience you should keep pinching yourself to see if you are dreaming."

I often wondered what the reasons were for the relative ease in getting things accomplished here. I think there are two or three reasons that still stay in my mind as very conspicuous explanations of this. The first one, it seems to me, is exemplified by one of my experiences in practice. In a city where I had lived most of the people I saw who had neurasthenia had it, I thought, because they had no particular interest in anything and didn't take active part in anything, with the result that they became bored and nervously broken down. When I saw people with similar trouble in Boston, it was because they were following an ideal with such insistence that they exhausted themselves in trying to reach what they were after. When I was in Peking—as it was called nine years ago—an able paper was published on the difference between the East and the West, by Hu Shih, the Chinese philosopher and publicist. He pointed out a variety of differences between the East and the West, and epitomized them by saying that the easterner was quite content to sit by the wayside and watch things go by, but the westerner was filled with a certain kind of discontent, what one of their poets has called a "*divine* discontent," which impelled him to go on and do better things than he had done before. I have had the feeling from the very beginning that one of the characteristics in this community is that element of divine discontent and the willingness to go on and do better things than had been done before. I found myself at once in an atmosphere where the President of the University, the Corporation of the University, the trustees of the hospitals, and especially the Massachusetts General where I was at work, and everyone else seemed to be striving to get things in better condition and still maintain the traditions that had made the institution what it was. I feel convinced that more than age and more than tradition, the present position of Harvard University, and the great influence that New England has had in the affairs of the nation, have been due to this attitude of divine discontent and the impulse to better things. I met no hostile opposition, except from the occasional "off-horse" that one finds in any organization; but I met much criticism—a nonpersonal, constructive criticism that was based upon dissatisfaction with imperfect things and a desire to make them better, with helpfulness in correcting them.

The other thing that impressed me very much, that many of you who live here may not see quite so clearly, is that in connection with educational, hospital or public affairs of any kind the outstandingly predominating element academically in this community is keenly interested in the one University. In almost all the organizations that I have knowledge of the controlling men are themselves Harvard men and are deeply interested in anything that may benefit Harvard. It has always seemed to me that this is one of the important assets of this University. In other places that I know anything about there is not that feeling. They may have one local university—they often have several—but the community itself is not intensely interested in one place and there are usually as many men there who are alumni of

*At a dinner held in his honor at the Harvard Club, Boston, on October 23, 1935, upon his retirement as Dean of the Harvard Medical School and Harvard School of Public Health.

institutions elsewhere as of the local university. There are graduates not only of the local university but almost as many men who are graduates of Harvard, Yale, Princeton or other places, so that their academic interests and academic devotion are very mixed indeed.

Before I came here I had had some unhappy experiences with university administrative officers, university trustees and hospital trustees. I even dallied at times in my thoughts, for my amusement, with the idea that some time I might persuade a benefactor to give a large gift in order that there might be established a school for training university presidents and trustees and hospital trustees. I came to the conclusion that that idea wouldn't work here because it had been so well done already. The corporations that I had known before were bodies that seemed to me—university and hospital trustees both—to be chiefly swayed by the feeling that their job was censorship and restraint. The Corporation of Harvard University, on the contrary, is thought by all the Faculty and especially by those of us who have, in administrative positions, had to make many hundreds of recommendations, to be a body that is there in order to encourage and help. The President that I served under most of the time I cannot speak of quite, I think, with calmness. I spent fifteen years serving with Mr. Lowell. Those fifteen years included, of course, many conferences and I never left any conference without a feeling that I had been helped, encouraged, and stimulated in a way that was one of the greatest gifts that I have had in all my active life. I remember well the day he told me he had, the previous day, given his resignation to the Corporation. I felt at that time as if I were academically orphaned. I think Mr. Lowell never knew, when he first asked me to be Dean and I quite flatly refused, one strong reason for my refusal was that I had still that complex about university administrators and I was afraid that Mr. Lowell might be as arbitrary as some others I had known. At the end of fifteen years with him, the only arbitrary acts I knew of on his part were in two or three instances when disagreeable things had to be done and he insisted on doing them himself, because, he said, "Such things are part of the president's job and you have to live with those men." I thought seriously of resigning when Mr. Lowell told me he had resigned. It seemed fairer to the new President, whomsoever he might be, not to precipitate that extra confusion and I decided to wait two years. My two years are now up and I shall always feel very happy that I did not resign earlier, because the past two years with President Conant have been two very happy years of association with him. I have always had the comfortable feeling that Mr. Conant and I were brought up on the same bottle!

My confession of faith in medical education has, I think, been quite simple. It has been, apparently, one that is sympathized with by most of my colleagues, and comes down to three main things. The first is one that I think anybody would agree with, namely, that those who lead in any subject in a medical school or in any other part of a university, must themselves be not only inspiring persons but they must be constantly adding to the progress of their subject. The second is that I think a medical school must grow continuously and intensively more deeply associated with the general university. Some of the older men present know the conditions when I entered Medicine, but the younger men may not see the importance of this point fully. The training in Medicine is one of the oldest trainings in the world, but it was long only a vocational training and often, in fact, almost a commercial training. Even when I entered a medical school, which school was then the most influential in the country, it was true that the fees received from students ran the whole medical school and, in addition to that, it was still possible for the senior faculty to "cut a melon," so to speak, at the end of the year and divide the excess of the amounts that had been received from students and therefore increase their salaries by that bonus at the end of the year. That, I think, shows how far the change has gone. It shows how commercial the point of view was at that time and how far separated from the scholarly attitude of a general university faculty. I have heard much discussion for many years of the reasons why a medical school must be associated with a university. The usual reason given is that there is no chance of getting the money that is needed for the expensive methods of the present day without having the influence and prestige of a university behind any such efforts. There are far more important reasons than this. The practical reasons in education and research are quite obvious, I think. The natural sciences have been the background upon which Medicine is built. They have become more and more essential. At the present time they are far more essential than ever before. The social sciences have always been of some degree of importance to Medicine. Psychology has long been important and no one can question that it is getting more and more important in the practice of Medicine. Economics has become so influential in Medicine that we have an Assistant Professor of Medical Economics in the Medical School; welcomed by the Faculty as being a very suitable thing. Sociology as it grows more forceful will be of essential importance. The Engineering School has become a blood brother of the School of Public Health, and Public Health and Medicine are Siamese twins. The Business School already has had many associations with the Medical Faculty. I have no doubt that in a very few years there will be active and inter-

ested coöperation between the Law School and the Medical School. Those are the practical aspects of it, but a larger aspect than that, I think, is that Medicine has become a scholarly pursuit in all its lines. It must exist in a scholarly atmosphere and not by itself if it is to progress adequately.

The other thing that seems to me to be so important, the third thing, is, what shall be done in regard to the superior student? I think everybody is agreed that an imperative duty in any medical school is to educate all students well and to turn them out to do an excellent job. But there is something more important almost than that. I think any faculty that is a good faculty may be depended upon to do that reasonably well, but the thing that is in my mind always is, what shall be done in regard to the exceptional man? Many years ago, long before any general restoration occurred there, I was in Williamsburg, Virginia, and while there went into the old Bruton Parish Church, which to me is, I think, the most moving place I was ever in in this country—to an American one of the most moving places in the world. They had, in restoring the pews, memorialized those great men who about the same time worshipped there. It is profoundly moving to see the names of George Washington, Thomas Jefferson, James Monroe, John Marshall, Patrick Henry, Edmond Randolph, and others only less great including, particularly, George Wythe the father of lawyers and especially the father of those two great adversaries Jefferson and Marshall, who had, each in his way, such profound influence on our country's great institutions. I question whether one could find anywhere such a galaxy of men of great influence gathered together at about the same time and at a very critical time. The Dean of William and Mary learned that I was there and insisted on my speaking to the students in chapel next morning. There is an old worn tablet in the floor of Bruton Parish Church chancel with the inscription, "Here lie two sweet infants" and after giving names and dates it ends with the simple plea, "God give us grace to follow them." I used that part of the inscription as my text in speaking to the students, thinking, of course, not of the "two sweet infants" but of those great men who had been there and who had initiated so much of the things we care most for in this country. Standing there on the slab that covers the remains of John Randolph in old William and Mary, where most of the men got such academic education as they had (George Washington's was three months in surveying) it was deeply moving to think of the profound effects of the vision, the courage and the powers of leadership of the men who had been there at that time. That gave me to think then, and gave me to think many times since, what a precious thing leadership is and how far one may well go in attempting to find and develop those who seem to have the germs of leadership. We may all well feel very grateful to President Conant for making such determined efforts to go out and find leaders. But when you get them in your control as students they cannot be put into regular harness and regular routine with other students without great danger of blunting or killing their powers of leadership. Perhaps one of the things that I think is most feared by the conventional teacher is making experiments of this kind. I have seen repeatedly a start made to give great freedom to promising men and then because, in one or two cases, an individual did not do well with that freedom it was given up with all the fine promising students. It is a gamble, but it is a gamble for very precious results and it is sad to think of a whole group of men, who have powers that are beyond those of ordinary men, being obliged to fall back into lock step with the whole flock because of one or two mistakes that have been made in the choice of men for such privileges. It is one of the responsibilities of the Medical School or any other part of the University, to provide particular conditions for men who show signs of possible leadership, because of the great value they may prove to have. Since the Great War and since the awful destruction of intelligence that occurred then, it has seemed to me a peculiarly great responsibility, an almost solemn responsibility, to do what we can in this country where we have been relatively little touched by the loss of leaders, and especially during the present disturbed state of the world, to make the best conditions we can for those who may come to be leaders.

These are the things that I have had chiefly in my heart during the time that I have been Dean. I am not in the least desirous that my colleagues or my successor should feel any sentiment about carrying on details that have interested me. I trust that Dr. Burwell and my colleagues will not think that I hope my views will be followed after I have left my post. When a change occurs there must be a change or there will not be progress, but these great principles that I have spoken of are all things that I believe must be followed in order to accomplish the best that can be done. It is a happiness to think that with my successor and with my colleagues all this is in safe hands.

I have no regrets at giving up my work. I meet the relief from responsibility with great pleasure. I have great regrets in cutting the bonds with those I have worked with so long, but I shall have great happiness in one especial thing. When he was about to retire, Billroth who did so much for surgery, so much more than most of us do for any thing, was told by one of his friends that he should be very proud of his accomplishments. Billroth said he thought

little of them, but he did think often of the fact that scattered all over Germany and Austria were students of his, men who had made great names for themselves and men whom he had opportunity to help in some degree in their efforts toward their careers. I am happy to think that there are here in our own institution a large group of men that I have seen grow to leaders in their fields, and scattered over various parts of the country are others whose progress I have had opportunity to further and I shall have the greatest pleasure in watching them go forward. I shall always look back with the most happy and most affectionate feelings toward the twenty-three years that I have spent here and, perhaps, in many ways especially to the seventeen years I have spent in the Dean's work. I shall cherish particularly my association with President Lowell and recently with President Conant, and my intimate and affectionate association with many of my colleagues at the School.

NEW HAMPSHIRE MEDICAL SOCIETY

FACTORS IN THE MANAGEMENT OF CONSTIPATION*

BY FRED ELLSWORTH CLOW, M.D.†

"Do not fear to repeat what has already been said. Men need these things dinned into their ears many times and from all sides. The first rumor makes them prick up their ears, the second registers and the third enters."—LAENNEC.

CONSTIPATION is the commonest single disorder suffered by human beings. Usually it is, like cough in pneumonia, a symptom. The great majority of women are thought to have it, often during the whole life, though in recent years loose clothing and more exercise have apparently decreased its incidence. As a symptom it appears in a very large percentage of histories taken at the bedside and in the office. It is essentially a delay in the evacuation of food residues, bacteria, which make up from thirty to eighty per cent of the stool (Bassler), dead epithelial cells, and chemical refuse. Reichman has described cases in which an evacuation of the bowel took place normally at two and three weeks' intervals. In deciding whether constipation does exist, an arbitrary thought has been that more than two or three days' delay constituted an abnormal state. Perfect health, however, is not incompatible with these infrequent defecations, going even to the fifth and sixth days.

A definition of constipation then is not at all times so easy to compose. What to one patient is a normal condition is to the nervous health-conscious, apprehensive individual a veritable Banquo's ghost. Where one is satisfied to eject a hard, irritating stool after a siege of straining, another's life is utterly ruined unless the bowel be emptied at least twice each day of liquid and likewise irritating contents. To some the failure to defecate on two days a week is constipation, to others it is the failure to defecate at least each morning and night.

With constipation as in many other states, the greater the number and variety of the symptoms the less actual trouble the patient really has. It is always a comfort as well as a nuisance to the listener for the voluble subject to run off a list of discomforts ranging from falling hair to pain in the feet. Before he has proceeded far the doctor knows the answer. And fortunately it is often constipation, and nothing more.

In a survey for this paper more than fifty separate causes are found in the literature. It is, of course, impossible to cover so vast a field, so this discussion will be limited to a few aspects of the symptom complex; the etiology of a considerable group of cases where the trouble is easily ascertained and relieved; the importance of constipation in certain types of people; the relief of the symptom as a part of the treatment of many diseases.

Medical literature is filled with the discussion of constipation, yet much of it is positively useless to the clinician. "Some writers only mention constipation in passing, and dismiss the subject with a word or two about a change of diet. while others are too elaborate in their discussion, leading one to infer that many, if not most cases of constipation need an exploratory laparotomy for their correct diagnosis and a major surgical operation for their cure." (Canick.)

Though it is a concomitant of many diseases, constipation is not especially characteristic of any disease. In the majority of cases it points to local disturbance of either the large intestine, rectum or anus, and it is usually functional rather than organic in origin. The relief of the symptom is not followed by cure in all people. The only result is a return to the purgative unless the patient is more than ordinarily persistent. And it is the persistent patient who is often the most difficult to relieve because of his "colon-consciousness". However probably nearly all methods of treatment partly psychic, partly physical, partly dietetic will bring lasting relief.

Customary though it is to distinguish degrees

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such as obstipation and constipation, types such as atonic and spastic; organic and functional, as though it were possible to use these classifications as bases for diagnosis and treatment, it is usually the case that one deals with a combination of etiological factors as well as physiological variations in the actions of the alimentary tract. Organic change may be functional stasis.

One can but be surprised at the number of people who over large periods have taken increasing amounts of purgatives without any cause ever being sought. It is often these patients who have rectal or anal constipation. Relief of the latter difficulty is easy, satisfactory and permanent.

To define the cause of stasis in any given case may be a trying problem. In some instances the complications of the condition are, in themselves, causes. One can never forget in the individual of almost any age the possibility of the most serious cause of all, neoplasm. The diagnosis, at a time when operation can be successful, may tax the knowledge of the most specialized. Benign stricture, too, offers its own difficulties. Lead poisoning even in these modern days cannot be entirely ignored.

Fecal colic may present the symptoms of intestinal obstruction, with severe cramp-like pains, even fever and pronounced leucocytosis. Enemata will rule out the more serious condition, but the patient may be severely prostrated with points of residual abdominal tenderness, remaining for several days, presumably caused by local peritonitis at the site of spasm. More interesting still are the cases of genuine obstruction possibly with ulceration of the gut, in an apparently normal colon, due to fecoliths.

The differentiation of atonic and spastic constipation, except in certain types of individuals, is impossible. The senile patient with flabby skeletal muscles and the person who lives a sedentary life, likewise the high-strung nervous individual who is constantly under tension, are fairly easy to classify. But types fade into each other, with the variation in the response to stimuli, with mental attitude, habits and diet.

As direct causes one must mention weakness of the bowel wall, partial obstruction, from whatever cause, and weakness of the nerve mechanism. The flabby abdominal muscles of the woman who has had pregnancies; the ineffective diaphragm of the old person with chronic emphysema, the general incompetence of the senile, the weak will of the easy going all contribute to the large group who must have some sort of laxative. Idiopathic dilatation of the colon, spasm of the musculature from irritation of harsh contents, and even the improper use of ill-adapted cathartic drugs may be features in the situation. Acute constipation of a troublesome type may occur as the result of psychic shock.

Anal constipation has been recognized for many years, in London, as a clinical entity. Frew has called attention to its significance in babies and small children and has described the characteristic greenish brown color of the stool which is practically always present. The story told by these patients, many of whom are beyond middle life, is that they have been constipated from childhood. Often the statement is volunteered that fecal matter comes to the anus but no reasonable amount of straining will expel it. Even a soft mushy stool presents difficulty. Unless the stool is of liquid consistency there is trouble. Enemata, or drastic purges, are used to produce practically every movement. Feces evidently stay for days in the rectum simply because the patient is unable to get the mass through the tight orifice.

The most important symptoms of constipation are those of a feeling of fullness and pressure with vague acute and subacute pains, or most significant, the cramp-like pains of partial obstruction, benign or malignant. The pain may be localized to regions of impaction or it may affect the region of the descending colon or the entire abdomen. The secondary disorders of a "liverish" condition, poor digestion, torpor, nausea and even vomiting may be very real indeed. Fecal accumulation most frequently occurs in the sigmoid, though the cecal region may be the site of a firm tumor that may be the cause of a mistaken diagnosis. One cannot ignore the attacks of diarrhea which may occur in constipation as a result of the irritation of an impaction in the rectum or higher in the canal.

"Biliousness" is a real entity as has been pointed out recently by workers at the Mayo Clinic. That "liverish" feeling that many people vividly describe, especially after a too great strain has been placed on the gastrointestinal apparatus through overindulgence in rich food, is a very real sensation. The shortest way to rid the patient of his accumulation of toxic products of faulty digestion and putrefactive residues is to use the duodenal tube promptly. Drainage of the bile ducts may well precede lavage using magnesium sulphate or hydrochloric acid. After the bile ducts have been emptied, using either pump suction or motor, through the tube is given a hypertonic solution of sodium sulphate, sodium chloride and sodium bicarbonate with phenolphthalein. The intestinal canal is cleared from pylorus to anus.

Constipation is a symptom, frequently, of cancer of the rectum, along with alternating diarrhea, or preceding diarrhea. The diagnosis of the latter condition depends upon remembering that it is always possible, and then looking for it. One can never forget that the replacement of constipation by diarrhea, particularly that type characterized by small frequent

painful stools, and an intolerant rectum, is an ominous sign.

Blood in the stool unless it is red in color is more apt to arise from the small bowel. But every case of unexplained constipation should have repeated tests, though it must be remembered that occult blood may come from any part of the alimentary canal from mouth to anus. The difficulty of diagnosis of lesions of the large intestine where neoplasm is most frequent, is considerable. Where the stool is deformed, flat or ribbon-like, especially with mucus, grey or brownish in color the difficulty is more often irritable colon.

The habits and diet are of first importance in the presence or absence of constipation. The patient who habitually ignores the signals from a full rectum is bound to be in more or less trouble. For the majority of people who have constipation two courses are apparently followed: the condition is allowed to drift, the victim being satisfied with a stool twice or even once a week; or various types of easily exhibited cathartics, of increasing strength, are habitually used. At some time or other most people use phenolphthalein in increasing doses.

Diet alone may be the cause of undue delay in the intestine. Concentrated carbohydrates and strained vegetables leave so little residue that peristaltic action is wanting. In the physiology of the intestinal movement it must not be forgotten that while bulk often governs movement, at the same time it may be a menace in that large boluses may be formed from such material as bran and cellulose which have been decidedly overpopularized as laxatives. The more the gut is angulated or narrowed the greater the potential dangers of this occurrence.

A fibroid in the true pelvis or a large prostate may be the offender. In certain cases of loss of tone of the rectum, and bladder, occurring particularly in organic lesions of the spinal cord a normal prostate may serve to block completely the anal canal. Unless the impaction is removed promptly and treatment directed to the rectum itself the condition of such patients becomes deplorable indeed. The prostate itself may be extruded in advance of the stool.

Certain precautions must always be observed in connection with the interpretation of constipation as a disease and as a symptom. Fecal masses in the cecal or sigmoid region are easily mistaken for neoplasms. No diagnosis of abdominal tumor is really safe until one is certain that both bladder and bowel are empty. The observation of visible peristalsis may be a pitfall, when the patient is thin and the abdominal musculature is flabby. Acute constipation can be the cause of intense suffering simulating to a marked degree a genuine acute emergency, and this not only in children but in adults. The pain, shock and stomach disturbance have all the earmarks of a serious situation.

For a considerable period we have been teaching the laity the dangers of cathartics in the presence of abdominal pain. Many series of cases of perforative appendicitis with its grave mortality have been used to drive home this point. There is still room for more education in this direction. It has been the custom never to let slip an opportunity to tell those responsible for young people to use the enema bag freely, yet one is frequently astounded at the risks intelligent patients are constantly running.

The use of the stethoscope in abdominal examination should be as common as in auscultation of the chest. Unhappily it is not. Much information may be learned from listening to an abdomen that is in trouble, especially when the constipation is of recent development. The student should be familiar with the normal sound of gas and fluids in the gut. With radiographic evidence it may give the only physical signs to be elicited.

There are a few local results that appear to come directly from constipation. In some instances there is thinning of the gut wall; in others an actual thickening. What part delay plays in the beginnings of cancer is undetermined. Cancer occurs most frequently in men, while as Pennington has shown, women are more apt to have constipation. The significance that should be attached to the development of constipation in one of normal habit previously is the most important feature. The person who complains of this, and especially of cramps due to an effort to get material past a narrow place demands the best diagnostic attention.

The reality of the somatic symptoms of absorption of material, due to delay in the bowel, has been seriously questioned. It has been shown that packing the rectum with cotton produces all the headache, torpid feeling and abdominal discomfort coming usually from stasis. One can well believe that Munthe in "San Michele" tells the truth when he admits that in his manipulations of the wealthy Parisian women with "colitis" he was a bit of a quack.

The present-day diagnosis of "irritable" colon which seems so popular should be made with conservatism, especially if one believes that the "colon-conscious" person can get symptoms of everything to which flesh is heir. The best authorities are convinced that it is not an intestinal condition, but rather a neurosis. In all the work on intestinal stasis there has been a paucity of evidence of production and absorption of toxins and pathogenic bacteria that would stand the cold evaluation of science. The evidence offered by surgical treatment which was used in the early days, and which proved so disastrous for so many, should make us skeptical.

There is apparent agreement that the patho-

logical changes resulting from constipation concern themselves mostly with either thinning and dilatation of the colonic walls, from mechanical distention, or hypertrophy and spastic contraction of segments of the gut from prolonged efforts to force intestinal contents through. The interior of the colon is sometimes plastered with a uniform layer of feces from cecum to anus. Prolonged neglect on the part of an old person may lead to a solid packing of the entire large intestine, failure of peristalsis and death. Diarrhea may have occurred up to near the very end.

The notion of auto-intoxication from intestinal absorption has been with us a long time. Many disorders, even epilepsy, arthritis, hypertension and chronic Bright's disease have been attributed to this. Evidence is decidedly lacking that this is the fact. It would seem that more real benefit would have resulted to these people from the millions of "internal baths" that have left behind irritated colons in dejected patients. It is probably true that more systemic infections have arisen from too brisk catharsis than from microbe action in dry solid stools which notoriously contain a much smaller percentage of bacteria. There is no question that many patients are miserable when the rectum is full, and that relief is immediate once an evacuation takes place. But the relief is almost too sudden for any change in chemical intoxication.

The discussion of treatment centers about removal of the exciting cause almost more than in in any other condition. For the majority of cases a cause can be assigned and with perseverance it can be removed. The therapy of the condition has already been indicated in the discussion of the etiology.

No case of constipation, in all honesty, should be treated without rectal examination. Why doctors shy at the insertion of the finger in the rectum is a mystery, for, as a prominent surgeon remarked "if one does not put a finger in the anus he is apt to put his foot in it".

Besides:

1. The senile patient whose bowels are "just dead". For him only laxatives are of any use, and these mildest that will produce an effect.
2. The patient with fever must still get his calomel and salts.
3. The sedentary individual should be encouraged to walk in the open air, to "ride a bicycle" lying on his back after retiring, and to massage the abdomen, although this is never effective in the more resistant types of constipation. Even the leather covered "cannon ball" will make mighty little impression. And, as a rule, unless they are undesirably health-conscious most patients quickly tire of any regimen that requires much effort or time.
4. The uncoöperative patient must have his pills and potions.

   At present the market is flooded with combinations of paraffine oil and agar, usually with some real purgative as phenolphthalein or cascara. Apparently in the doses one can afford, the first two prove inefficient. The cost of such preparations puts them beyond the use of a good many people. In any consideration of the prolonged use of mineral oil two points should not be forgotten. This is the same oil that is admittedly the cause of epithelioma of the skin in textile workers. One may too, properly question the propriety of covering every particle of food in an envelope of undigestible fat, especially when we purposely omit lard and butter from the diet. What effects, if any, these obvious objections possess only the future can assess.

   Milk of magnesia, cascara, and the almost forgotten compound licorice powder all have their uses, especially for temporary purposes. One or two glasses of hot water while dressing may stimulate the rectum to satisfactory evacuation. Arabian paste, easily prepared in the kitchen from prunes, figs, dates and senna leaves offers a mixture that can be used by every adult and the older children.

   In many cases of functional indigestion the first thing to do is to stop all cathartic drugs. While some folks can stand drastic purgation without discomfort others are made utterly miserable with "gas and distress" by the mildest laxative.
5. For temporary use . . . and I regret to say, too often permanently . . . such laxatives as cascara and combinations of aloin and belladonna must be used.
6. Enemata are the safest and most effective ways of emptying the lower bowel. I know of no condition in which an enema of a pint of salt solution can do harm.
7. The treatment of anal constipation is simplicity itself. Examination discloses a firm narrow band encircling the anus, tight, tender and unyielding, just external to the pectinate line. Unless the rectum is investigated digitally the condition is sure to be missed. Gradual dilatation by bougies is not necessary or expedient for the obstruction is easily removed at one sitting, without division of the sphincter muscle. Apparently it does not recur. If fissure is present, as not infrequently happens from the repeated insults to the anal mucocutaneous lining, it is cured by the same operation which relieves the obstruction. Under general anesthesia the tight band is gradually and gently stretched, taking plenty of time for thor-

ough dilatation. Blood should not be produced. In many cases fissure of the anus is present with its sentinel pile. No anesthetic is needed in a baby for the stricture-like band is never so tense and spastic as in adults, so gentle dilatation with the index finger is not too painful.

In spite of all one says and does, millions of people are still going to seek their relief at the drug counter. One cannot wholly blame them when the treatment of so apparently simple a condition is yet imperfectly understood. How a dose of castor oil produces its effect is still a mystery. On the one hand is the costly and elaborate investigation often followed by a radical operation. On the other is the box of pills or the bottle of patent medicine given without a thought by the harassed physician or by the suave counter prescribing druggist. Between them is the rational régimen which relieves the condition but does lend itself to the present hurried mode of life. The patient deserves a sensible investigation of his difficulty.

Whether or not one believes in auto-intoxication, it is a fact that many persons suffering from a variety of conditions are relieved by transduodenal lavage and a genuinely clean intestinal tract. It is conceded that there is such a condition as biliousness and that drainage of the bile ducts and emptying the bowels does not relieve it. Migraine may not be caused by absorption of noxious toxins from the bowel but many of its victims are relieved by a cathartic which possibly removes the allergic substances, and by the prolonged use of lavage in not a small percentage of cases are permanently relieved.

The use of belladonna and olive oil enemata, to be retained overnight, relieves the spastic lower colon and sigmoid. It always does away with the patient's discomfort when evacuation leaves him with a feeling that "there is still something left".

Such extensive operations as colectomy in vogue a few years ago, as the result of Lane's teaching, have fortunately been given up. The last state of the patient was far worse than the first. The concept of auto-intoxication upon which these drastic measures were based has been disproved. It is generally accepted that bacteria do penetrate the intestinal wall, to be destroyed in the lymphatic protective mechanism and in the liver. In any event it appears that the loose stool is far more dangerous than the dry solid type. It would appear that advanced workers who have dared put their patients on a régimen which produced firm hard stools at long intervals had at least done them no harm. (Burnett.)

There can be no question that constipation is a nearly universal symptom; that it possibly has deep consequences for the patient; that it may be of serious import in the history and physical examination. In spite of the fact that the majority of people will stick to the pill box or the greasy bottle, physicians should realize that the condition deserves serious study and efficient treatment. In many instances the cause is easily discovered and as easily remedied. The patient is always entitled to the best in evaluating this symptom as he is in dealing with other more spectacular manifestations of disease. We are certainly not discovering a new disease concept.

The tremendously successful exploitation of the people of this country by commercial interests through the sale of laxative drugs alone is an index of the frequency of the condition discussed. We should remember, however, that constipation is not particularly a disorder of civilization when it is noted that Hippocrates and the medical writers of China and Egypt seriously considered it. Hippocrates describes abdominal massage. The Talmud advises the use of water, in large quantities, and vegetables. In modern medical literature hardly a disorder has had more attention, yet the problem still plagues us. We are managing a situation that has plagued man from the dawn of his birth.

DISCUSSION

PRESIDENT LORD: I will call upon Dr. Richard W. Robinson of Laconia to discuss this paper.

DR. RICHARD W. ROBINSON: *Mr. President and Members of the New Hampshire Medical Society*—I wish first to compliment Dr. Clow upon his courage in reading a paper on this subject. I don't know of anybody who could have done it any better than he.

Of course, the problem of constipation is so universal to all of us that it should demand interest, but the very commonness of it, I suppose, explains why we so seldom hear it discussed at our meetings. Another reason is that being armed with a number of drugs and materials, many so largely advertised to us, that give us the means of overcoming its most prominent symptom, we forget its importance.

Leaving out the mechanical obstructive types of constipation, the type of constipation that is produced by such metallic poisons as lead and those constipations that result from diseases of the central nervous system, I think, as Dr. Clow has said, that most of the remaining cases of constipation can be classified as neuroses; some perhaps purely as neuroses, but the majority of them as neuroses only if we consider as a neurosis all functional nerve disorders. I think that the largest number of constipated individuals owe their condition, at first, to deliberate failure to respond to the calls of nature, and later to the taking of cathartics in order to relieve themselves at a more convenient time. I feel sure that a great many indefinite abdominal complaints are due to an irritated colon from the constant use of drug cathartics, and that the relief of a great many patients depends on getting them off the cathartic habit. That, to me, is the most important problem of constipation.

I think it has been pointed out that a large percentage of individuals that come into the clinics in

the cities with a tentative diagnosis of chronic appendicitis, gall bladder diseases, and so on, those who have nothing particularly definite about their complaints, turn out to be patients who have habitually taken cathartics. They show tenderness that extends along the whole of the large bowel. This tenderness is present upon palpation, and these patients are certainly relieved by getting them away from drug cathartics.

I do not believe that there is any place in the treatment of constipation for any drug by mouth, with the exception of the occasional administration of pure bile or bile salts, and this only rarely. The mineral oils that we have always considered to be the least irritating of all of the substances used in the relief of these ordinary cases of constipation, I believe, have been shown to contain a sufficient amount of sulphur to be in itself definitely irritating to the colon.

Now, there are a great many ways that have been described in the literature of dealing with the type of patient that I am speaking of. I will not enter into any discussion of them, except to describe to you a routine which has proved satisfactory to me.

Of course, the most important thing is the establishment of a definite habit time of bowel movement. The normal time, the most propitious time, is shortly after breakfast in the morning. I have been, in the last few years, prescribing for these patients, the drinking of a pint of normal saline an hour before breakfast in the morning. That gets them up early, but it does not do them any harm, and then I have them go to stool, at a prescribed time, in conducive surroundings, trying to convince them that they must take the time and be mentally at rest. After a period of fifteen minutes of effort, if they are not able to move the bowels at first, I have them take a small enema of normal saline, simply to start the bowel movement along.

If their diet, by history, is deficient in cellulose and fruit sugars, I think it is important to give them a moderate amount of these. I don't think it is valuable to stuff them full of indigestible substances.

DR. LOUIS C. AGER: *Mr. President*—Perhaps I have a foolish habit of contradicting people, but it is at least useful in making us think. All physicians should read Henshaw Ward's book on "wishful thinking".

Back in the last century when I was studying medicine I heard a lot about ribbon stools and their diagnostic importance. Having a mechanical turn of mind I tried to visualize their formation, but I have never been able to see it. I was doing considerable autopsy work in my undergraduate days and studied the intestine with the problem in mind. Just stop and think. The feces in the large bowel are quite liquid under normal conditions. We know that there is almost no absorption of liquid in the small intestine. On the other hand with stasis the feces remain so long in the large bowel that they become hard and dry. The sigmoid pouch is much more voluminous than the upper bowel, and the muscular pressure during defecation is strenuous. If the stool is soft it must be moulded into a solid mass. The shape of the stool depends upon the size and shape of the anal orifice.

PRESIDENT LORD: Is there further discussion, gentlemen, of this paper of Dr. Clow's?

DR. FLANDERS: *Mr. President*—I would like to discuss this paper from the standpoint of the patient, and not as a doctor. I have discovered that a man can go two days without a movement of the bowels and not die. A few years ago, when we made the rounds in the hospital, the first thing we used to ask the nurse was, "Did the patient's bowels move yesterday?" and if the answer was "No," we said, "My God! why haven't you done something about it?"

I think I have been through the whole regimen. I have had my gall bladder pumped out. I have swallowed eighteen inches of hose with a lead sinker on the end and have lain five hours on my side until I was as hysterical as a woman. When bile was not rising in sufficient quantities, the nurse obligingly drenched me with a solution of sulphate of magnesia. I certainly cannot recommend this procedure from the standpoint of the patient, nor can I commend it as a physician. I have eaten bales of hay, have drunk gallons of water and stuffed myself with vegetables until I stuck out like an alderman, but it did not help a great deal.

When I suspected that I might have an appendix, I did not dare to take any more cathartics, and that was a grievous condition. Just the other day I read that phenolphthalein is poisonous, so that is definitely out of the picture.

As for an enema: it is difficult to get enough in to do any good. I have a vivid recollection of one case that was managed successfully. I once had a Negro patient who had a stoppage. He had lived in the woods all winter and eaten corn meal until he was unable to defecate.

I told his father to take him home and give him an enema. He asked, "What's dat, Boss?" I replied, "Make up a lot of hot soapsuds and get a lot into him. He will say he can't hold any more, but give him plenty." Later the father reported success, although the treatment was crude and unduly vigorous.

An enema may be good in an emergency, but just now I am very hazy as to the treatment of chronic constipation. I have tried everything except unwarranted extreme treatment, and I am still constipated.

MISCELLANY

PERSONALS

Dr. Richard W. Robinson of Laconia will be in New Haven the first three days of each week as a member of the "Urological Clinic" at the New Haven Hospital of Yale University. He will also be a part-time instructor at the "Urological Clinic" of Yale Medical School. Dr. Robinson graduated from the School in 1920.

Dr. Charles F. Keeley of Claremont and Dr. Howard E. Thompson of Nashua have been made Fellows of the American College of Surgeons. They made the trip to San Francisco to receive their certificates of membership.

Dr. John L. Fromer of Bethlehem sailed recently on the SS. Manhattan for Cork, Ireland, where he will study at the Rotunda Hospital in Dublin, Irish Free State, until May.

NURSES

The State Board of Nurse Examiners held a routine business meeting Tuesday, October 8, at the office of the Commissioner of Education in Concord. The Board's membership comprises Miss Belle Valentine, R.N., of Concord; Miss Rosanna O'Donoghue, R.N., of Portsmouth, Chairman; Miss

Addie M. Moore, R.N., of Grasmere; Miss Louise Thompson, R.N., of Keene, and Sister Larivee, R.N., of the Notre Dame Hospital in Manchester.

The annual graduation exercises of the Elliot Community Hospital Training School, Keene, were held Thursday evening, October 24. James A. Hamilton, Superintendent of the Mary Hitchcock Memorial Hospital at Hanover, gave the graduation address.

Public Health and School Nurses from Sullivan and Cheshire Counties held their semi-annual meeting at the Elliot Community Hospital October 18. Many suggestions were offered in connection with school health problems. Miss Eva Fortier, R.N., of Hinsdale, presided at the session.

The commencement exercises for the school for nurses of the Laconia Hospital were held Friday, October 25. An address was given by Marietta D. Barnaby, R.N., Registrar of the Central Directory for Nurses, Boston. Dr. Clifton S. Abbott, President of the New Hampshire Medical Society, presented the diplomas.

Health and Welfare provisions of the Social Security Act as they may affect New Hampshire were outlined and discussed at the forum for Graduate Nurses of the State, conducted at Concord, November 15, by the State Board of Health. More than 100 nurses were in attendance. Dr. Charles Duncan, Secretary of the Board, was one of the principal speakers.

The Training School for Nurses at the Littleton Hospital was discontinued November 1. This is in line with the general trend in New Hampshire where student nurses are being concentrated in a few educational centers.

COUNTY MEETINGS

At the recent annual meeting of the Grafton County Medical Society held at Hanover the following officers were elected:

President: Ralph G. Perry, Wells River, Vt.

Vice-President: Kenneth Churchill, Lebanon.

Secretary-Treasurer: Leslie K. Sycamore, Hanover.

Censors: Ralph E. Miller, Hanover; John M. Page, Littleton; Arthur W. Burnham, Lebanon.

Member of Committee on Medical Jurisprudence: Arthur T. Downing, Littleton.

Delegates: Robert M. Deming, Glencliff; Leslie M. McKinlay, North Haverhill; Leslie K. Sycamore, Hanover.

The Belknap County Medical Society held its monthly meeting at Plymouth, November 13. Dr. Leslie K. Sycamore of Hanover spoke on "X-Ray Examination and Gall Bladder Disease." Dr. Raymond J. Turley of Meredith presided at the meeting.

CLINICS

The State Cancer Commission is now maintaining clinics in eleven New Hampshire communities. Members of the Commission include Dr. James W. Jameson of Concord, Dr. George C. Wilkins of Manchester, Joseph W. Epply of Manchester and John L. T. Shaw of Chichester.

The New Hampshire Tuberculosis Association held its eighteenth annual meeting at the Hotel Carpenter, Manchester, N. H., the latter part of October. The guest speaker was Dr. Arthur J. Strawson of Worcester, Mass., who praised New Hampshire for its campaign against tuberculosis, resulting in a death rate of but 35 per 100,000 population yearly, the lowest in all of New England and ninth lowest in the United States. Dr. Robert B. Kerr of Manchester was reëlected Executive Secretary.

A Maternal Health Center has recently been organized with offices at 1 South Street, Concord. Dr. Ursula G. Sanders of Concord is President.

HOSPITALS

The Margaret Pillsbury General Hospital at Concord is now equipped with a 100 per cent shock-proof Theradex machine for use in the treatment of cancer. This makes it one of the first New England hospitals to have a complete shock-proof x-ray equipment.

Under the will of the late Albert N. Parlin the Eliiot Community Hospital of Keene received a check for $20,000 to be used to establish what is known as the "Albert N. Parlin Free Bed."

The Laconia Hospital is to be the recipient of $3,000 under the will of Laura Weeks, late of Providence, R. I.

Through a gift of a $10,000 x-ray equipment by former Governor and Mrs. Huntley N. Spaulding, the Frisbie Memorial Hospital of Rochester is to have an up-to-date x-ray room installed.

COMPARISON OF DEATH RATES FROM TUBERCULOSIS IN THE NEW ENGLAND STATES IN 1934 (PULMONARY AND ALL FORMS)

State	Death Rate per 100,000 Population
New Hampshire	35.5
Maine	37.7
Connecticut	44.4
Rhode Island	44.4
Massachusetts	48.6
Vermont	52.6

—*Bulletin N. H. State Board of Health.*

CASE RECORDS
of the
MASSACHUSETTS GENERAL HOSPITAL

ANTE MORTEM AND POST MORTEM RECORDS AS USED IN WEEKLY CLINICAL-PATHOLOGIC EXERCISES

FOUNDED BY RICHARD C. CABOT, M.D.

TRACY B. MALLORY, M.D., *Editor*

CASE 21501

PRESENTATION OF CASE

A sixty-one year old Nova Scotian teamster was admitted complaining of loss of weight and regurgitation of mucus.

For about ten years at intervals the patient had regurgitated small amounts of mucoid material which seemed to come "from the back of his throat". This, however, afforded him no particular discomfort. It was not accompanied by nausea and only recurred at scattered intervals. About three years before entry it became somewhat more frequent, was associated with nausea, and the regurgitated material occasionally had a foul odor. As before, it appeared to come from the back of the throat and the patient stated that he did not believe that it was actually vomited. It was usually small in amount but as the frequency increased he eventually brought up as much as a quart daily. The nausea became so troublesome that he curtailed his meals more and more. During the month before entry he limited his diet to milk and ginger ale only. At about this time he had a slight burning pain beneath the lower end of the sternum for a few days. This was relieved by powders prescribed by his physician. As a result of gradual loss of weight and strength he was compelled to cease working several weeks before admission. At the time of admission he was unable to eat more than a spoonful of soft food at a time and the regurgitated material was now quite constantly foul smelling. His weight, which had been 190 pounds ten years previously and 164 one year previously, was now only 135 pounds. There was never any hematemesis or dysphagia. Two weeks before admission an x-ray taken at another hospital showed a "pouch at the lower end of the esophagus".

He had suffered from hayfever occasionally until one year before admission. His gallbladder had been removed thirteen years previously and a bilateral herniorrhaphy was done two years later.

Physical examination showed a well-developed but poorly nourished man who appeared to have lost considerable weight recently. There was complete edentia. The neck was negative and the trachea was in the midline. The heart and lungs were normal. The blood pressure was 130/75. The scars of the hernia repairs and cholecystectomy wound were well healed, but there was a recurrent inguinal hernia on the right side.

The temperature, pulse and respirations were normal.

Examination of the urine was negative. The blood showed a red cell count of 4,700,000, with a hemoglobin of 80 per cent. The white cell count was 4,600, 70 per cent polymorphonuclears. Three stool examinations were negative. There was no occult blood. The nonprotein nitrogen of the blood was 24 milligrams. A Hinton test was negative. Gastric analysis showed a free hydrochloric acid of 0 to 50 and a total acid of 75 to 111.

An x-ray following a barium meal exhibited gross irregularity of the lower esophagus and herniation of the fundus of the stomach through the esophageal hiatus. The hernia, grossly irregular as a result of many filling defects, formed a tumor mass between the heart and the spine. There was no obstruction to the passage of barium. The stomach below the diaphragm, and the duodenum were negative. A plain film of the chest showed clear lung fields and costophrenic angles. The heart was not remarkable. Within the shadow of the heart was a rounded shadow 10 centimeters in diameter.

There was moderate improvement in the patient's ability to retain food. On the thirteenth hospital day an exploratory laparotomy was performed but additional surgical intervention was deemed inadvisable. The patient died on the following day.

DIFFERENTIAL DIAGNOSIS

DR. CHESTER M. JONES: As I started to read this I wondered whether we were not dealing with a diverticulum of the esophagus with retention of food which was later regurgitated. As we read along, however, the picture becomes very unusual for a diverticulum without any complicating factor.

Heartburn or burning pain under the sternum, for instance, I think would be distinctly unusual for simple diverticulum.

"At the time of admission he was unable to eat more than a spoonful of soft food at a time and the regurgitated material was now quite constantly foul smelling." This, of course, indicated stasis.

"His weight, which had been 190 pounds ten years previously and 164 one year previously, was now only 135 pounds." A very striking loss of weight and that, it seems to me, definitely rules out a diverticulum alone on which to base all his symptoms or as the basis of the loss of weight.

From the story alone it seems to me that we have a right to consider two or three diagnoses.

It is possible that he had an esophageal diverticulum, at the lower third of the esophagus, but this seems unlikely in view of the fact that he had so much stasis and because of the quality and character of the symptoms, and with such a striking loss of weight. The only other condition I know of that will give as much vomiting as that is either a diaphragmatic hernia, a fairly large one, with stasis in the hernia at times, or, of course, an obstruction lower down in the stomach itself. I think Dr. Mosher is absolutely correct in saying that diaphragmatic hernia is very frequent and very commonly does not have symptoms. Occasionally they produce symptoms, however, but I think it is rather rare. The usual symptom is easy vomiting, especially when leaning forward, with regurgitation through the cardia from a large gastric pouch above the diaphragm. There may be pain at times which sometimes simulates gall stones. It usually occurs at about the age of sixty, but I think it is extremely unusual for a patient with a simple diaphragmatic hernia, no matter how large, to have vomiting of this degree and the terrific loss of weight that he had. I take it he was a laborer doing hard work who could not be bothered about anything except symptoms that were striking. I think this pouch seen by x-ray was a pouch all right and that it represented a sacculation, possibly from a diaphragmatic hernia, but with some complicating factor.

"He had suffered from hayfever occasionally until one year before admission. His gallbladder had been removed thirteen years previously and a bilateral herniorrhaphy was done two years later." I should say these facts were unfortunate from the patient's point of view but contribute nothing to the history.

"The neck was negative and the trachea was in the midline." This suggests that there was no mediastinal tumor which was displacing the trachea.

Aside from the emaciation, the physical examination does not help us at all in making a diagnosis. There was no evidence of herniation of the diaphragm with the stomach and colon above the diaphragm.

Following histamine there was a perfectly good secretion of normal gastric juice with nothing in it that was diagnostic. One thing I would like to know about the gastric analysis which is not given is the question of tube stasis. Was there a large amount, and how much was removed? It is possible the tube might have gone through the hernia and that there was no stasis where the stomach was explored with the tube.

I should like to comment on the x-ray films. I should think we have the explanation here of the complicated factor in this diaphragmatic hernia which was the basis of loss of weight and illness. Most diaphragmatic hernias are not described in this way, as having many filling defects in the portion of the stomach which is visible. Filling defects—unless associated with food stasis—should represent polypi or very striking gastritis with hypertrophy of the rugae with pseudopolypoid formation. I think polyps ought to be considered. Polypi themselves do not cause symptoms such as are described here unless there is a complicating factor. For that reason one would have to consider malignant degeneration of polypi which apparently were seen in this portion of the stomach above the diaphragm. There was no actual obstruction of the esophagus from the point of view of the roentgenologist but there must have been some pressure on the esophagus and some difficulty in the passage of solid food. The patient was existing on liquids and not taking sufficient calories in the liquid to maintain weight and strength. The shadow in the region of the heart might well be a tumor mass in the wall of the stomach in the upper portion of the diaphragmatic hernia.

I suppose that an attempt was made to explore this diaphragmatic hernia on the basis of there being a tumor there and in the hope that the tumor might be resected, certainly a very major operation and obviously it was more than this patient could stand.

I should think from the story and x-ray report that one had the right to make a diagnosis of diaphragmatic hernia, that a portion of the stomach above the diaphragm developed polypi with malignant degeneration of some of them. The interesting thing is that there is no evidence of involvement of the stomach below the diaphragm. I think it occurs occasionally. With any diaphragmatic hernia, if there is fixation of the portion of the stomach above the diaphragm, one might develop quite striking gastritis. I think I have seen such cases. They do have some discomfort and pain and we do know there is a tendency in chronic gastritis with polypoid formation to have degeneration of the polyps with the development of malignancy. I think that is what occurred here, above the diaphragm, and not in the portion of the stomach below the diaphragm.

X-ray Interpretation

Dr. Richard Schatzki: The examiner (I did not examine the patient myself) saw the barium run along this mass which is visible just above the diaphragm. It is irregular and has the appearance of an ulcerated tumor. The barium runs along the border of the mass much as the esophagus does along a large herniated stomach. Here you see the shadow described as lying behind the heart representing the same mass. There is perhaps one factor which is not quite consistent with a hernia, that is the fact that a well-developed fundus seems to lie below the diaphragm.

I should like to say a few words in general in regard to diaphragmatic hernia which we are

discussing. There are, in principle, two different types of hernia, the congenital type which has a short esophagus and is rather rare, the acquired type which is much more common, particularly in old people. In these cases the esophagus is pushed upward by the stomach or the herniated stomach lies alongside of the esophagus. We examined a number of old people and could demonstrate hernias in about three out of four cases when examined with particular care in regard to the question of herniation. Some of these patients received air insufflation of the colon in order to increase the abdominal pressure. These hernias in old people are apparently nothing but an increase of the normal movability of the esophagus and stomach in the hiatus.

May I use this opportunity to say a word about the differential diagnosis of varices and cancer of the esophagus by x-ray? One may get a wrong impression from the last case which was discussed here. The differential diagnosis in most cases is rather simple. In difficult cases demonstration of normal relief during peristalsis speaks in favor of varices and rules out cancer. Another test which may help is based on the fact that the size of varices can be changed by change of the intrathoracic pressure. There are, however, a few cases in which differential diagnosis is extremely difficult. The important fact which this case taught us was to call such a lesion cancer if there is difficulty in swallowing.

DR. JONES: May I ask one question in view of that? You showed me a case a year and a half ago which had a definite picture of occluding mass of varices in the esophagus. The patient had definite symptoms of obstruction.

DR. SCHATZKI: Yes; we first called it cancer, later saw the lesion extend over the whole esophagus and did not know what to call it. An enlarged spleen was discovered at that time. Liver test showed slightly impaired function. He died later and we did not get an autopsy. He had difficulty in swallowing up to his last day and I now think that he had cancer.

CLINICAL DISCUSSION

DR. EDWARD D. CHURCHILL: The preliminary diagnosis was diaphragmatic hernia with carcinoma of the stomach. "Exploration in the region of the esophageal hiatus revealed a large, hard mass involving the cardiac end of the stomach and impacted in a diaphragmatic hernia. On gently running a finger alongside the mass an area of necrosis and pus was encountered in malignant tissue. Obviously a terminal case. Closed without drainage." Encountering a perforated carcinoma in that region spells the death of the patient and there is nothing more to be done about it.

CLINICAL DIAGNOSES

Carcinoma of the stomach.
Diaphragmatic hernia.

DR. CHESTER M. JONES'S DIAGNOSES

Diaphragmatic hernia.
Polyps of the stomach.
Malignant degeneration of the polyps.

ANATOMIC DIAGNOSES

Leiomyosarcoma of the distal third of the esophagus with extension into and ulceration of the mediastinal lymph nodes.
Dilatation of the esophageal hiatus of the diaphragm.
Operative incision: Exploratory laparotomy.
Peritonitis, acute localized.
Hydrothorax, bilateral.
Arteriosclerosis, slight coronary and aortic.
Cholecystitis, chronic.
Cholelithiasis.
Operative scars: Bilateral inguinal herniorrhaphy.

PATHOLOGIC DISCUSSION

DR. TRACY B. MALLORY: At autopsy a large tumor mass was found within the diaphragmatic hernia. It turned out to be not in the stomach but in the terminal portion of the esophagus, stopping absolutely short at the cardia; and the stomach was entirely free. The tumor had spread through the esophageal wall and involved a group of mediastinal lymph nodes on the anterior surface of the esophagus just behind the pericardium which were greatly enlarged to a mass six or seven centimeters in diameter. There was a small area of localized peritonitis in the immediate neighborhood of the operative exploration which is, of course, what would be expected from the findings at operation. The surprise in the case did not come until the microscopic sections of the tumor were examined. It turned out not to be a carcinoma but a leiomyosarcoma of the esophagus which is a quite rare tumor in this location, probably fifteen or so cases on record.

DR. AUBREY O. HAMPTON: How polypoid was this mass? How much of the lumen of the esophagus was involved?

DR. MALLORY: Most of the mass was external to the esophagus rather than within it.

CASE 21502

PRESENTATION OF CASE

First Admission. A fifty-four year old white American female was admitted complaining of hoarseness.

One year before entry the patient noticed a swelling in her neck but was advised by her physician that it was of no significance. A few

months later she found that she was gaining weight and was advised to take thyroid tablets, which she did not do. She had been rather nervous during the year preceding admission, a fact which she attributed to familial difficulties. Four months before entry she had an attack of "grippe" which was associated with hoarseness. After the subsidence of the "grippe" the hoarseness persisted and attempts at lengthy conversation produced some breathlessness. There was a slight nonproductive cough during this time. She also had slight difficulty in swallowing which manifested itself as a "sensation of pressure" in the esophagus. There was no marked dysphagia. Her weight at the onset of her illness was 183 pounds. At the time of admission it was 193 pounds. The catamenia were still present and regular.

She had had diphtheria at the age of thirty-three and probably malaria at thirty-four.

Physical examination showed an obese, apprehensive, middle-aged female in no acute physical distress. The eyes were normal. Oral hygiene was poor. The right lobe of the thyroid was slightly enlarged, hard and irregular, and a small nodule about one centimeter in diameter was palpable in it. There was no tenderness. The thyroid seemed to extend on the right side substernally. The heart action was rapid but was otherwise negative. The blood pressure was 240/120. The lungs were clear.

The temperature was 98.6°, the pulse 98. The respirations were 20.

Examination of the urine showed a specific gravity of 1.032, with a slight trace of albumin. The sediment contained 30 white blood cells and an occasional red blood cell but was otherwise negative. The basal metabolism rate was plus 10.

X-ray examination showed slight thickening of the soft tissues of the neck anterior to the trachea. The trachea was slightly displaced posteriorly with no appreciable flattening or lateral displacement. There was no visible mass in the chest. A slight mottling in the right first interspace was considered suggestive of an old healed tuberculosis.

Three days after admission an operation was performed and about half of the right lobe of the thyroid was removed. It was impossible to remove the entire lobe because of adherence and infiltration. Postoperatively the patient had very little reaction, convalesced well, and was discharged thirteen days after admission.

Second Admission, nine months later.

After leaving the hospital the patient felt well for about five months and then began to feel drowsy after breakfast. This sensation was relieved by a brief rest. A month later the mass in the right side of her neck again became evident but there was no dysphagia or dyspnea. She occasionally had a tickling sensation in her throat. One month before her readmission a second operation was done on her neck at another hospital. She reëntered this hospital for roentgen therapy.

Physical examination showed no essential change from that done at the previous admission.

She received two doses of x-ray and was discharged in two days.

Third Admission, one year and three months later.

Since her last admission she had felt quite well until three months before entry, when she became quite markedly fatigued while attending her sick children. About the same time, following exposure to a "draft", she developed pain in her right hip and a stiff neck. The pain in the hip was dull in character, persistent, and resulted in the necessity of using a cane. She received eight x-ray treatments which relieved this lameness. Shortly afterward, however, severe pain occurred in the left hip and she returned to the hospital for relief.

Physical examination was refused.

X-ray examination showed a moth-eaten destruction of the left pubis and bones in the left acetabular region with soft tissue thickening. There was also some periosteal bone destruction at the upper end of the right femur.

She was given local irradiation and was discharged two weeks after entry.

Fourth Admission, three weeks later.

The patient returned at this time for further roentgen therapy. The x-ray examination showed slight distortion of the trachea as a result of a peritracheal soft tissue mass. A small defect was noted in the manubrium of the sternum. She was discharged three days later after receiving treatment.

Fifth Admission, three months later for further x-ray treatment.

Physical examination showed her to be fairly well developed and nourished and quite uncoöperative. She complained of tenderness everywhere. The neck, pelvic girdle and left foot showed a brownish discoloration and thickening of the skin. There were several irregular firm masses on both sides of the neck, moving with deglutition. The liver edge was felt three fingerbreadths beneath the costal margin upon deep inspiration. There was a slightly tender swelling of both ankles. There was no limitation of motion of the left hip but tenderness was elicited over the left hilum.

Examination of the blood showed a red cell count of 3,890,000, with a hemoglobin of 70 per cent. The white cell count was 5,600, 70 per cent polymorphonuclears, 11 lymphocytes, 14 monocytes and 5 eosinophils.

Sixth Admission, one month later.

Bence-Jones protein was not found in the urine.

X-ray showed a questionably active lesion below the right lesser trochanter. There was diminution of density in the bones and region of the right knee. There was a mass observed

at the end of the left second rib near the costochondral margin. The right side of the diaphragm appeared to be paralyzed, which was relieved after x-ray treatment.

She was discharged one week after reëntry.

Seventh Admission, one and a half months later.

Since her last admission she had been having considerable pain across her chest and in the right knee and left ankle.

She refused to allow examination of her knee. A firm mass was present at the left costochondral junction. The heart was not enlarged but a soft systolic murmur was audible. Its location was not recorded. The blood pressure was 160/90. There was tenderness present over the right hip joint. The right knee and left ankle joints were swollen and tender. She received a series of x-ray treatments and was discharged in three weeks.

Final Admission, two months later.

Since her last admission she had been confined to bed most of the time because of marked weakness. The right knee was quite painful. There were also swellings in the left upper chest and axilla which were likewise painful.

Physical examination showed the patient to be mentally dull. The mass in the left anterior chest was larger than at the previous admission. There were no nodes in the axillae. Breath sounds were coarsened generally but the heart and lungs were otherwise unchanged. The spleen extended 2 centimeters beneath the costal margin with inspiration. There was a mass palpable on the medial aspect of the left heel.

Examination of the blood showed a white cell count of 5,300, 70 per cent polymorphonuclears, 1 lymphocyte and 29 per cent monocytes. An occasional stippled cell was observed.

She received further roentgen therapy and was discharged in two weeks. Following her return to her home she went progressively downhill and finally died four months later, three years and two months after the first entry.

Differential Diagnosis

Dr. Robert R. Linton: "One year before entry the patient noticed a swelling in her neck but was advised by her physician that it was of no significance." A very questionable thing to tell a patient I should think.

"The catamenia was still present and regular." The last statement is entirely irrelevant as far as the story goes. It is unusual that it should have been regular and present at fifty-four.

From the present illness I should state that the important facts are she was admitted complaining of hoarseness, she had noticed a lump in her neck a year before and she had difficulty in swallowing. The first thing that comes to my mind, of course, is malignancy, and malignancy most likely associated with the thyroid gland or with an aberrant thyroid. The tumor might also be in connection with the larynx or in close proximity to it. I do not think the fact that she had gained ten pounds during the last year is of great importance. Perhaps the only importance I would place is that with the disease I am thinking of I would not expect a great loss of weight early in the disease.

"The right lobe of the thyroid was slightly enlarged, hard and irregular, and a small nodule about one centimeter in diameter was palpable in it." This description would rather indicate that the lump the patient had noticed was in the thyroid, since it is the only mention of any lump that is made here. The description is a little difficult to understand, "hard and irregular, with a nodule one centimeter in diameter". One would rather expect a number of nodules would have been felt rather than simply one.

I should say that the laboratory data were essentially negative. The urine test I imagine was not a catheter specimen so that the sediment could be discredited.

From the description of the operative procedure here I should say there were two possibilities: one is carcinoma of the thyroid and the other is a thyroiditis, a Riedel struma. It is certainly obvious that whatever it was, it was impossible to remove it completely. It is very unusual to remove only half a lobe of the thyroid I should say. One usually removes at least three quarters, and possibly more. So we have the added fact that there was operative difficulty in removing what was attempted.

Dr. Tracy B. Mallory: A point which is not put in there, Dr. Linton, but which I think you might as well know, is that the pathologic diagnosis at that time was chronic thyroiditis.

Dr. Linton: That is interesting.

You cannot tell me what they did at the other hospital?

Dr. Marshall K. Bartlett: I was present at that operation. It was equally unsuccessful. We attempted to remove the other lobe with about the same degree of failure.

Dr. Linton: As you see she had a number of admissions following this second admission. The third was one year and three months later at which time she had developed pain in the right hip and a stiff neck and again received x-ray treatment and was discharged home. The x-ray examination at this time "showed a moth-eaten destruction of the left pubis and bones in the left acetabular region with soft tissue thickening and some periosteal bone destruction at the upper end of the right femur". That explains the pain in the right hip. She apparently had more pathology in the left that was not giving symptoms.

The brownish discoloration of the skin I interpret as being due most likely to x-ray therapy.

At the sixth admission apparently someone suspected multiple myeloma and a Bence-Jones protein was done which was negative.

No note of the neck is made at this admission but in the previous admission it showed a great many nodules which moved on deglutition.

The blood is not significant I think.

Perhaps Dr. Hampton will demonstrate the x-rays at this time.

DR. AUBREY O. HAMPTON: I think the first pain she complained of was in the right hip. At that time we took this film of the pelvis. You can see here a moth-eaten bone destruction in the left pubis and periosteal elevation and subperiosteal destruction in the right femur. A little farther down the shaft in the right femur there is this extensive bone destruction which is fairly typical of malignancy.

This is a film of the pelvis after radiation and the bone destruction which was here has disappeared and new bone is present—a complete healing of that lesion. The femur responded likewise and there is no evidence of disease the second time. Here is a better film of the pubis before treatment. It is very obviously destroyed.

The films of her chest which showed paralysis of the diaphragm are not here but I know that she had paralysis of the diaphragm on three different occasions and each time immediately after treatment over the neck or sternum the diaphragm would begin to move again; that is, within one week. I at no time saw a mass in the substernal area. She did have, however, destruction in the sternum, very indefinite, and I think in one or two ribs that I do not have here. Her os calcis showed a very unusual condition and was apparently involved also. There was a round area of bone destruction in its center and she had considerable pain in that heel and in her knee. We never were sure that she had bone destruction around the knee. The relief from pain by x-ray was quite prompt but the recurrence was almost as prompt.

DR. LINTON: You have a skull plate?

DR. HAMPTON: I think we did at the time multiple myeloma was suspected; but the skull was negative.

I might also add that I saw and treated her many times and that she had at no time any palpable glands that I could find.

DR. LINTON: It seems obvious to me that the diagnosis is a carcinoma with metastases to the bone. The question is where did it arise? We have everything to point to the fact that it arose in the neck. We have a history of a lump, the story of dysphagia, no difficulty in breathing, but difficulty in swallowing. We have two incomplete operations on the thyroid.

The breast is one of the common sites of carcinoma with metastases to bone and here we have no note of her breasts. They presumably were normal. One of the other common conditions is carcinoma of the prostate. This patient being a female we can rule that out. Another condition is carcinoma of the thyroid. I think it is not unlikely that there may have been a small nodule of carcinomatous tissue which could have been missed either at the operation or in the specimen. It only needs to be a very small one. The metastatic distribution of the disease may overshadow the primary lesion so that it may be missed. I think I will stick to carcinoma of the thyroid with bone metastases.

DR. GEORGE W. HOLMES: May I make one suggestion? This tumor responded very well to radiation.

DR. LINTON: Then I should suspect papillary adenocarcinoma of the thyroid.

DR. HOLMES: They do not as a rule respond readily.

DR. LINTON: Then I suppose I will have to consider Hodgkin's disease.

DR. HAMPTON: I may have misled Dr. Linton. The response to the lymphoma dose of radiation was exceedingly prompt and the lesion would recur just as promptly in the same place.

DR. J. H. MEANS: There was a case that you probably remember that Dr. Mixter operated on, a very rapid fulminating type of thyroid malignancy which did respond to x-ray very rapidly twice and then recurred in the mediastinum and was followed by very rapid death. Histologically there was a dispute among authorities as to what kind of tumor it was. I think Dr. Mallory rather favored carcinoma, but Dr. Allen Graham of Cleveland was here and called it a lymphoma. Dr. Hartwell I think was on the lymphoma side, but it was impossible to decide with finality what kind of tumor it was, apparently. It is interesting that Dr. Mallory and one other thought it was a carcinoma and yet it did respond very well to x-ray, so perhaps Dr. Linton is justified after all in his position. Thyroid tumors are unlike all others in the body anyway. They are very peculiar.

DR. HOLMES: We have had very few cases of metastases from tumor of the thyroid to bone and my experience, of course, is limited. Carcinomas from any part of the body may be fairly sensitive to radiation but as a general rule they are not.

Another point that is against carcinoma is the location of the metastasis in the heel. Carcinomas as a rule do not involve the bones of the hands or feet, except when there is a pretty generalized distribution through the skeleton.

CLINICAL DIAGNOSIS

Lymphoblastoma of the thyroid and bones.

DR. ROBERT R. LINTON'S DIAGNOSES

Carcinoma of the thyroid with multiple metastases.

Anatomic Diagnoses

Lymphoblastoma of the thyroid, with metastases to the sternum, ribs, right femur and left os calcis and with extension to the mediastinum.
Pathologic fractures of the right femur.
Involvement of the right phrenic nerve with paralysis of the right diaphragm.
Cholelithiasis.
Endometrial polyp.
Pseudomucinous cystadenoma of the left ovary.

Pathologic Discussion

Dr. Mallory: The tumor in this case was exactly the same type that Dr. Means has been describing in the other case. The original pathologic diagnosis was chronic thyroiditis and there is no question that he had an extensive and severe thyroiditis. When the tumor promptly recurred two months later, and Dr. Miller operated again, it was then perfectly obvious that we were dealing with some form of malignancy. The sections removed at that time were very difficult to interpret and we finally called them lymphoma. Going back to the original section from the first operation we were then able to see what we had missed before, a very small area of pretty definite tumor in one corner of one section.

The patient finally was autopsied at home and we removed pieces of numerous tumors all over the body and put through numerous sections. I have been looking them over this morning and not in a single one of these tumors was I able to find a viable tumor cell. The last dose Dr. Hampton gave her seemed to have killed off the cells as far as can be judged by the microscope or else one of those mysterious spontaneous degenerations of malignant tumors occurred.

So the postmortem gave us no additional histologic information. The tumors we found scattered through a large number of bones and there was a very large recurrent mass in the lower portion of the neck running into the anterior mediastinum, infiltrating the manubrium and portions of the first two ribs. It grew posteriorly behind the pericardium, around the hilus of the lung, surrounding the phrenic nerve on the right very definitely. The lymph nodes throughout the body were negative and the spleen was negative. The distribution of this lesion is certainly not that of lymphoma. The majority of the metastases are apparently blood borne rather than lymphatic borne and the remainder of the tumor found is a local extension from the original mass.

There has always been a tremendous amount of argument over the classification of this particular group of tumors. There is one group of men who have done a good deal of special work on thyroid tumors who feel that every tumor in the thyroid is carcinoma whether it looks like carcinoma, fibrosarcoma or lymphosarcoma. This is one which they might cite in their favor. It certainly looks much more like lymphoma than carcinoma but in general its behavior is a little bit more like carcinoma. I still think lymphoma and fibrosarcoma may occur in the thyroid, however.

Dr. Linton: To me there is one thing in which it did not seem like carcinoma of the thyroid. It did not have metastases to the lung.

Dr. Mallory: Yes, you would expect metastases to the lung.

Dr. Lerman: When I first saw the slides I thought it was chronic thyroiditis and with the recurrence it looked more like lymphoma. I sent a few to Dr. Allen Graham and he reported that it was a typical case of lymphosarcoma. He suggested the possibility of its having arisen from a Hashimoto struma. He has reported two cases and Smith one case; but the original sections do not suggest it.

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ANNUAL REGISTRATION OF PHYSICIANS

A BILL providing for the annual registration of physicians has been filed recently with the Secretary of State by the Board of Registration in Medicine. The real intent of the bill is slightly different from the obvious purpose which appears on superficial examination, because of what seems to be an inverted order in the sections 4a and 4b. The real intent of the bill is to provide accurate and adequate information, easily accessible to all, as to which physicians the state *now* regards as qualified to practice medicine. Annual registration is only one of the elements necessary in fulfilling this intent.

At present there is at the State House an accurate list of all physicians whom the Board of Registration has licensed and has unlicensed, but this list refers only to these two acts. There is no way of knowing whether a person registered by the Board has died, or has moved to another state; no way of knowing whether the certificate of any person registered by the Board is being misused, as in the case of impersonation of a deceased person to whom it was issued. There is no record of the whereabouts of the person registered if he has failed to record his certificate with the town clerk, either originally or after moving to another town. Finally, although the list of registered physicians in the office of the Board is open to public inspection (by statute, only the copy of the list in the office of the Secretary of State is thus open) the securing of information by a person in a distant part of the state is time-consuming if one writes, and expensive if one telephones. Thus copies of the list should be more easily available, in all parts of the state, as in the office of every physician, every town clerk, every board of health, every drug store and every hospital. It is clear that a list meeting the requirements stated above and distributed widely throughout the state would be of very great advantage in protecting the citizens against unlicensed practitioners of medicine, because knowledge as to registration could be easily and almost immediately obtained.

What objection can there be to the making of such a list and to the wide distribution of copies? A possible objection might come from the medical profession who would have to pay the annual registration fee. They are now harassed enough by petty taxes for this and for that, among which the requirement of a certified check to pay the one dollar annual narcotic tax is one of the most annoying. Why should they have another charge imposed upon them?

The medical profession should consider first the possible advantage to the public, and then the possible advantage to themselves. Nothing more need be said as to the possible benefit to the public if results are obtained comparable with what was accomplished in the state of New York when it introduced annual registration of physicians. In the first year, one thousand unlicensed practitioners of medicine left New York to go to states without the annual registration. Undoubtedly Massachusetts received many. It has been estimated that in time a thousand would leave Massachusetts if the bill became law. This would be no small gain in protecting the public.

There might be economic gain for the physician. If the money now acquired by this thousand were to go to the medical profession it might not reach the figure of a million dollars, a low estimate of the income received by the quacks and charlatans, but it would certainly be more than the cost of annual registration.

There is another economic advantage for the physicians: the state will give them a certain amount of legitimate advertising, as in its opinion they are qualified practitioners. The opinion of the state may or may not be justified but it will be published and widely dis-

tributed throughout the state as an annual reminder.

There is a possible objection: Why should the ethical upright, honest, registered physician pay for the enforcement of the law against the quacks and charlatans and other unregistered persons? Well, the whole activity of the Board of Registration in Medicine is under the police power of the state. The original registration fee is not merely to defray the cost of making out a certificate of registration. It is to assist in the exercise of the police power of the state, and the costs of the annual lists, and of annual registration might be met by increasing the original fee for registration. A more just allocation of these costs is to have a low fee for examination and original registration for the physician beginning to practice, and to distribute the continuing cost over the years of practice by an annual fee for annual registration as long as the physician remains in practice.

The heart of the matter is that the state should register physicians, as it now does, keep a list, as it now does, and add to that a procedure for keeping the list accurate, complete and up-to-date and making it easily available to all interested persons by wide distribution throughout the Commonwealth.

THIS WEEK'S ISSUE

CONTAINS articles by the following named authors:

TRUESDALE, PHILEMON E. M.D. Harvard University Medical School 1898. F.A.C.S. Surgeon, Truesdale Hospital, Fall River, Mass. His subject is "Diaphragmatic Hernia in Children with a Report of Thirteen Operative Cases." Page 1159. Address: 151 Rock Street, Fall River, Mass.

RICE, G. ARNOLD. M.D. Tufts College Medical School 1916. Bronchoscopist, Rutland State Sanatorium, Rutland, Mass. Ear, Nose and Throat Surgeon and Bronchoscopist, Holden District Hospital, Holden, Mass. His subject is "Bronchoscopy and the Differential Diagnosis of Tuberculosis, Lung Abscess, and Bronchiectasis." Page 1173. Address: Holden Clinic, Holden, Mass.

HAMPTON, AUBREY O. M.D. Baylor University College of Medicine 1925. Assistant Roentgenologist, Massachusetts General Hospital. His subject is "Progressive Idiopathic Pulmonary Fibrosis Associated with Emphysema." Page 1174. Address: Massachusetts General Hospital, Boston.

BAKST, HENRY J. Ph.B., M.D. Harvard University Medical School 1931. Junior Visiting Physician, Boston City Hospital. Assistant in Medicine, Boston University Medical School. His subject is "Mycotic Infection of the Lungs in the Differential Diagnosis of Pulmonary Tuberculosis." Page 1177. Address: 482 Beacon Street, Boston.

WHITE, PAUL D. A.B., M.D. Harvard University Medical School 1911. Physician, Massachusetts General Hospital, Boston. Assistant Professor of Medicine, Harvard University Medical School. His subject is "The Differential Diagnosis of Pulmonary Tuberculosis and Pulmonary Circulatory Changes." Page 1179. Address: Massachusetts General Hospital, Boston.

LORD, FREDERICK T. A.B., M.D. Harvard University Medical School 1900. Clinical Professor of Medicine, Emeritus, Harvard University Medical School. Member of Board of Consultation, Massachusetts General Hospital. President, Massachusetts Tuberculosis League. His subject is "The Differential Diagnosis of Pulmonary Tuberculosis." Page 1181. Address: 305 Beacon Street, Boston.

EDSALL, DAVID L. A.B., Sc.D., M.D. University of Pennsylvania School of Medicine 1893. Jackson Professor of Clinical Medicine, Harvard University 1912-1923. Chief of Medical Service, Massachusetts General Hospital 1912-1923. Dean, Harvard Medical School 1918-1935 and Harvard School of Public Health 1921-1935. He presents an address given upon his retirement as Dean of the Harvard Medical School and Harvard School of Public Health. Page 1184. Address: c/o Dr. Cecil K. Drinker, 55 Shattuck Street, Boston.

CLOW, FRED ELLSWORTH. M.D. Harvard University Medical School 1904. F.A.C.P. Visiting Physician, Huggins Hospital, Wolfeboro, New Hampshire. His subject is "Factors in the Management of Constipation." Page 1187. Address: Brown House, Wolfeboro, New Hampshire.

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THE VALUE OF ARTIFICIAL MENOPAUSE IN CANCER OF THE BREAST

In recent years there has been a renewed interest in artificial menopause as an adjunct in the treatment of carcinoma of the breast. Review of the work carried out by Beatson and

*A series of short selected articles by members of the Section is being published weekly.
Comments and questions by subscribers are solicited and will be discussed by members of the Section.

his followers early in the century discloses that they secured favorable temporary regressions in about a third of their cases of inoperable cancer of the breast as a result of bilateral oöphorectomy. The procedure was rather widely used until the development of radiation therapy offered a direct and more effective palliative attack on advanced lesions.

The original proposal of castration was based partly on the known relation between ovarian activity and growth of the breast, and partly on the apparently slower growing and less malignant characteristics of cancer in older women. New data have gradually accumulated in substantiation of these observations. Careful studies of end results of operations for cancer of the breast have shown that the percentage of cures in young women is less than in women who have passed the menopause; and that the grade of malignancy, as shown by histological study, tends to be higher in young women. Other studies have shown that there is a definitely increased likelihood of developing cancer in the remaining breast, after removal of one breast for cancer. If pregnancy occurs, this likelihood becomes almost a certainty, and latent metastatic foci are stimulated to rapid and highly malignant growth.

From the laboratory have come experiments showing that oöphorectomy prevents or decreases the incidence of spontaneous mammary cancer in susceptible strains of mice, and that transplantation of the ovary into young castrated males in some instances causes the development of spontaneous mammary cancer.

Radiation therapy has been used considerably to relieve pain due to bone metastases in the lumbar spine and pelvis; and many patients treated in this way have experienced an artificial menopause. In this group of patients some very striking regressions of the malignant metastases have been observed, even in areas of the body where no treatment was given. Stimulated by these observations, radiologists have been inclined to bring about an artificial menopause as part of their treatment of inoperable and recurrent carcinoma of the breast. Thus a considerable group of cases has been accumulated, and results have been encouraging enough to warrant an extension of the method. Most of the cases have been treated too recently to permit statements as to the duration of the regressions, which appear to occur in about a third of the women who are before the age of menopause.

Some clinics have been recommending artificial menopause by x-radiation as a routine procedure in young women after operation for cancer of the breast. This seems justifiable on the grounds (1) that the per cent of cures is greater after the menopause; (2) that a subsequent pregnancy carries a grave hazard of activating latent metastases, or carcinoma of the remaining breast; (3) that since established metastases in some instances undergo regression after x-ray artificial menopause, it is reasonable to infer that latent foci of metastatic disease will be inhibited or postponed in their development. The procedure is too recent to be evaluated in terms of the percentage of five-year cures, but the evidence on which it is based warrants its employment before end-result studies are available.

New Fellows Admitted to the District Societies in November, 1935

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Higgins, Donald Ellwood, Cotuit.

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Dean, Stanley Rochelle, State Hospital, Taunton.
Ledger, George H., State Hospital, Taunton.
Talkington, Perry Clement, State Hospital, Taunton.

Bristol South

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Harrington, Harold Francis, Luther's Corner, Seekonk.
Kenler, Maurice David, 241 County Street, New Bedford.
Lobo, Jose Paulo, 304 Columbia Street, Fall River.

Essex North

East, Harry Colin, 137 Main Street, Andover.
Gurry, Joseph Francis, 222 Bruce Street, Lawrence.
Hindman, James Harold, 46 Amesbury Street, Lawrence.
Kelleher, John Joseph, Jr., 61 Eutaw Street, Lawrence.
Moore, Carlton William, 14 Pond Street, Georgetown.

Essex South

Alt, Richard Edward, Beverly Hospital, Beverly.
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Duff, Paul Harrington, 7 Perkins Street, Peabody.
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Mahoney, Patrick James, Longwood Towers, Brookline. Office: 319 Longwood Avenue, Boston.
Mallory, George Kenneth, 94 Longwood Avenue, Brookline.
Naterman, Hyman Louis, 61 Intervale Street, Roxbury.
O'Neill, Hugh Wilson, 6 Parley Vale, Jamaica Plain.

Orlansky, George J., 1234 Blue Hill Avenue, Dorchester.
Roberts, Charles Dewees, 1053 Brush Hill Road, Milton.
Rothschild, David, Foxborough State Hospital, Foxborough.
Rovner, Miah Henry, Norfolk Prison Colony, Norfolk.
Sewall, Weston, 31 Fairview Street, Roslindale.
Smith, Herbert Harold, 29 Williston Road, Brookline.
Turner, Ralph Gordon, 107 Louis Pasteur Avenue, Roxbury. Office: 52 Bay State Road, Boston.
Tynan, James Joseph, 666 Adams Street, East Milton.
Younge, Paul Adolph, 11 Morton Road, Milton. Office: 101 Bay State Road, Boston.

Norfolk South

MacKinnon, George Lincoln, 119 Elm Avenue, Wollaston.
Maguire, James Alfred, 279 East Squantum Street, Atlantic.

Plymouth

Cahill, John Edward, 25 Division Street, Brockton. Office: 481 Main Street, Brockton.
Eastwood, Medora Viola, 63 Court Street, Plymouth.
McLean, Sterling Alexander, 4 Rock Street, Middleboro.
Welch, Robert Francis, 25 South Avenue, Brockton. Office: 231 Main Street, Brockton.

Suffolk

Butler, Allan Macy, 1A Acorn Street, Boston. Office: Children's Hospital, Boston.
Clifford, Milton Henry, 156 Newbury Street, Boston. Office: 270 Newbury Street, Boston.
Deraw, Matthew Arnold, 80 East Concord Street, Boston.
Howard, Edgerton McClellan, 479 Beacon Street, Boston.
Moore, Merrill, 270 Commonwealth Avenue, Boston.
Nason, Louis Howard, 572 Huntington Avenue, Boston. Office: 483 Beacon Street, Boston. (On and after January 1, 1936.)
Prien, Edwin Louis, 99 Commonwealth Avenue, Boston.
Salemi, Charles, 9 Prince Street, Boston.
Schraffa, Louis Emilio, 19 Bennington Street, East Boston.
Simmons, Fred Albert, Jr., 101 Bay State Road, Boston.
Thompson, Milton Strong, Jr., 51 Allston Street, Boston.

Worcester

Brown, Bessie Florence, State Hospital, Westboro.
Gardiner, Harry Miller, Westboro State Hospital, Westboro.
Haling, Raymond Francis, 19 Chapin Street, Southbridge.
Heller, Hyman, 252 Main Street, Webster.

Worcester North

Barnes, Janet Stetson, State Colony, Gardner.
Edgar, William Ladell, 145 Main Street, Athol.
Ward, Arthur Henry, Ash Street, Winchendon.
Wilcox, Paul Harlan, State Colony, Gardner.

THIRD ANNUAL POSTGRADUATE MEDICAL EXTENSION COURSE

The following sessions have been arranged by the Committee for the week beginning December 15:

Barnstable

Sunday, December 15, at 4:00 P.M., at the Cape Cod Hospital, Hyannis. Subject: Latest Developments in Endocrinology. Instructors: J. C. Aub and Oliver Cope. J. I. B. Vail, Chairman.

Bristol South (Fall River Section)

Monday, December 16, at 4:00 P.M., at the Stevens Clinic of the Union Hospital, Fall River. Subject: Diseases of the Liver: Surgical Problems in Diagnosis of Acute Disease of Gall Bladder and Liver. Instructors: E. S. Emery and H. M. Clute. Eugene A. McCarthy, Sub-Chairman.

Essex South

Tuesday, December 17, at 4:00 P.M., in the Nurses' Home of the Salem Hospital, Salem. Subject: Pediatrics: The Neonatal State and Its Diseases; Medical and Surgical Aspects. Instructors: J. L. Morse and P. J. Mahoney. Walter G. Phippen, Chairman.

Hampden

Thursday, December 19, at 4:00 P.M., at the Academy of Medicine, Professional Building, 20 Maple Street, Springfield, and 8:00 P.M., at the Holyoke City Hospital, Holyoke. Subject: Neurological Aids in the Diagnosis and Treatment of Disease from the Medical Viewpoint. Problems of History and Examination with Special Reference to (a) Neurosyphilis, Multiple Sclerosis and Other Degenerative Conditions. (b) Diseases with Acute Onset, such as Meningitis and Cerebral Accidents. Instructor: H. R. Viets. George L. Schadt and George D. Henderson, Chairmen.

Hampshire

Wednesday, December 18, at 4:15 P.M., in the Nurses' Home of the Cooley Dickinson Hospital, Northampton. Subject: Kidney and Bladder Diseases, B (Surgical): Prostatism and Related Diseases. Cystitis and Pyelitis. Instructor: Richard Chute. Robert B. Brigham, Chairman.

Middlesex South

Tuesday, December 17, at 4:15 P.M., at the Cambridge Hospital, Cambridge. Subject: Neurological Aids in the Diagnosis and Treatment of Disease from the Medical Viewpoint. Problems of History and Exam-

ination with Special Reference to (a) Neurosyphilis, Multiple Sclerosis and Other Degenerative Conditions. (b) Diseases with Acute Onset, such as Meningitis and Cerebral Accidents. Instructor: Abraham Myerson. Edmund H. Robbins, Chairman.

Norfolk South

Monday, December 16, at 8:30 P.M., at the Quincy City Hospital, Quincy. Subject: Neurological Aids in the Diagnosis and Treatment of Disease from the Medical Viewpoint. Problems of History and Examination with Special Reference to (a) Neurosyphilis, Multiple Sclerosis and Other Degenerative Conditions. (b) Diseases with Acute Onset, such as Meningitis and Cerebral Accidents. Instructor: J. B. Ayer. David L. Belding, Chairman.

Plymouth

Tuesday, December 17, at 4:00 P.M., at the Brockton Hospital, Brockton. Subject: Peripheral Diseases of Blood Vessels. Instructors: H. F. Root and R. H. Smithwick. W. H. Pulsifer, Chairman.

A NEW COUNCILOR FOR NORFOLK DISTRICT

Dr. S. F. Curran of Dorchester has been elected to fill the vacancy existing in the Council among those representing Norfolk District.

MASSACHUSETTS LEGISLATIVE NOTES

BILL FOR THE ANNUAL REGISTRATION OF PHYSICIANS

THE COMMONWEALTH OF MASSACHUSETTS
Board of Registration in Medicine,
State House, Boston
December 1, 1935.

To the General Court of Massachusetts.

In accordance with the provisions of section 33 of chapter 30 of the General Laws, a copy of the recommendations for legislation to be contained in the annual report of this Department (Pub. Doc. No. 56), is herewith submitted, together with a draft of the bill embodying the legislation recommended. This draft has been submitted to council for the House of Representatives, as required by law.

Yours very truly,
STEPHEN RUSHMORE, M.D., *Secretary*,
Board of Registration in Medicine.

THE COMMONWEALTH OF MASSACHUSETTS
In the Year One Thousand Nine Hundred and Thirty-Five

AN ACT to provide for the Annual Registration of Physicians and the Annual Publication of the List of Physicians duly registered.

Be it enacted by the Senate and House of Representatives in General Court assembled, and by the authority of the same, as follows:

SECTION 1. Chapter one hundred and twelve of the General Laws, as appearing in the Tercentenary edition thereof, is hereby amended by inserting after section four the two following new sections:—

SECTION 4A. Every person registered by the board as a qualified physician, who is engaged in the practice of medicine within the commonwealth, shall annually in December renew his registration for the ensuing calendar year by payment of two dollars to the board and recording with the board his name, his registration number, his professional address, and such other information as the board may require, on blanks furnished by the board at the request of the physician and signed by him under the penalties of perjury; and thereupon the board shall issue to him a certificate showing that he is entitled to continue in the practice of medicine for the period covered by said renewal. Whoever, being duly registered under section two or corresponding sections of earlier laws, practices or attempts to practice medicine without complying with the requirements of this section, shall be punished by a fine of not less than five nor more than one hundred dollars.

SECTION 4B. On the first day of March of each year, the board shall publish a list of the physicians who, in compliance with the provisions of section two or section 4A, as the case may be, are authorized by the board to engage in the practice of medicine in the commonwealth during the current calendar year, giving the name of each registrant, his registration number, his professional address, and such other information as the board may deem necessary, and shall send to each registrant a copy thereof.

RECOMMENDATIONS

I. Providing for Annual Registration of Physicians and for Annual Publication of the List Thereof

The statute now provides for the registration of qualified physicians and the keeping of a list of such registered persons which is open to public inspection in the office of the Secretary of State. In practice the information contained in the list is given out at the office of the Board as a matter of convenience to enquirers. No provision is made by the statute for keeping the list up-to-date and the Board, therefore, knows nothing about a physician after registration, except the town in which he records his certificate (statutory), unless complaint is made to the Board, or by chance his death is reported. He may have changed his place of residence and even left the State, or he may have died.

The Board, therefore, does not know who is actually practicing medicine in Massachusetts, and it is impossible for the law enforcing body to restrict practice to registered persons. The result is that there are probably a thousand unlicensed practitioners in the State, and it may well be that a considerable

number are practicing under licenses of deceased physicians.

The providing of an accurate, complete, and up-to-date list made easily available by wide distribution throughout the State will go far to eliminate unregistered practitioners of medicine from Massachusetts. Such a list is impossible without annual registration.

MISCELLANY

DR. H. P. MOSHER DELIVERS THE MÜTTER LECTURE

On December 4, 1935, Dr. Harris P. Mosher delivered the Mütter Lecture at the College of Physicians of Philadelphia. The title was "Histology and Pathology of the Esophagus with Clinical Applications."

MEDICAL AFFAIRS IN MAINE

Cancer Clinics. A well-planned and supervised cancer clinic has now been in operation at the Maine General Hospital in Portland for the past three years. This hospital has an adequate x-ray apparatus and an ample supply of radium.

At the Central Maine General Hospital in Lewiston and at the Thayer Hospital in Waterville cancer clinics have been established, with, however, a more limited supply of radium. In Bangor, at the Eastern Maine General Hospital, the radium supply is entirely privately owned.

At a recent meeting of the Council of the Maine Medical Association it was voted to hold the next Clinical Session of the Association in Waterville in October, 1936. These annual clinical sessions have been extremely well attended and are very popular.

On November 21, 1935, a combined meeting of the Kennebec County Medical Society and the Kennebec Valley Dental Association was held at the Elmwood Hotel in Waterville, with a large attendance. A clinical session was held from 5 to 6 P.M., dinner at 6:30 P.M., and the scientific session at 7:30 P.M. The following papers were read and excited much valuable discussion:

"Relation of Dentistry to Medicine," by Dr. Percy Butterfield, D.D.S., Togus, Me.

"Blood Dyscrasias Manifest by Oral Lesions," by Dr. Theodore Hardy, Waterville, Me.

"Acute Oral Conditions," by Dr. F. T. Hill, Waterville, Me.

EDW. H. RISLEY, M.D., *Reporter.*

DR. ARTHUR BERK ADDRESSES A ROTARY CLUB

At a meeting of Rotary Clubs at Plymouth, New Hampshire, recently, Dr. Arthur Berk of Brookline, Massachusetts, with an office at 270 Commonwealth Avenue, Boston, delivered an address with the title "The Mind and Its Problem."

WPA GRANT FOR MIDDLESEX COUNTY SANATORIUM

The trustees of the Middlesex County Sanatorium at Waltham have been officially advised that the Federal Government has granted an appropriation of $304,000 toward the enlargement of the Institution by one hundred and sixty beds.

Dr. Sumner H. Remick, Superintendent of the Sanatorium, assisted the County Commissioners in filing with the Public Works Administration the necessary application for these funds in August. In September, in furtherance of the project, Dr. Remick accompanied by the Chairman of the Hospital Trustees, Honorable Walter C. Wardwell of Cambridge, and Frank Kiernan, Executive Secretary of the Massachusetts Tuberculosis League, went to Washington to interview Mr. Harry L. Hopkins. Later when results did not seem to be forthcoming, the same group visited Honorable David I. Walsh at his home in Clinton and laid the needs of the Hospital before the Senator. He was so impressed with the emergency situation which has arisen through long waiting lists and the increasing demands for hospital care by the patients in the cities and towns in the district, that he agreed to interview Honorable Harold Ickes, Secretary of the Interior and Public Works Administrator. A few days later the County Commissioners received word that the appropriation had been granted.

The Middlesex County Commissioners secured legislation in the 1935 General Court enabling them to raise funds to meet the Federal grant, if secured, for the building of the addition to the Sanatorium. As soon as word was received from Washington, Dr. Remick and his associates proceeded to the business of arranging for the letting of contracts and other details. Matters have progressed now so that the contracts will be let within a few days and it is expected that the addition to the Institution will be available for the reception of patients on or before January 1, 1937.

ANTI-VIVISECTION ACTIVITY

The New York Anti-Vivisection Society is working to have a bill enacted which is designed to prohibit vivisection of dogs.

CORRESPONDENCE

ELECTROSURGICAL CHOLECYSTECTOMY

Editor, *New England Journal of Medicine,*

In this *Journal,* issue of October 9, 1930, I published methods for electrosurgical removal of acutely inflamed and of sclerotic gall-bladder[1]. "The gall-bladder is emptied; split to the cystic duct, which is tied; . . . cut the gall-bladder away along its attachment to the liver, leaving the section in contact with the liver in place. The cutting can be done with the electrosurgical unit, the hemorrhage controlled by clamping and tying the larger vessels and coagulating the smaller ones, the remaining tissue of the gall-bladder being fulgurated."

In November 1933[3] Thorek published a method called "cholecystelectrocoagulectomy" which was essentially the same, except that he used it on "unselected" cases; advocated contact coagulation of the portion of the gall-bladder left in place, instead of fulguration; did not tie the branches of the cystic artery, but depended on coagulation to stop them; advocated "peritonization" of the coagulated gall-bladder bed and the tied stump of the cystic duct. In this article, even though exploration of the bile-duct was advised, drainage was decried, the idea being that drains are "inimical" to healing of electrocoagulated surfaces.

Recently I have reported (this *Journal*) experimental work which led to the development of the method[3] and its application in clinical cases[4], *advocating, however, electrocoagulation of the remaining segment of the gall-bladder according to Thorek in preference to the original method of fulguration.* I disagreed with Thorek on the question of peritonization of surfaces, and upon drainage.

In a letter published in this *Journal*, November 14, 1935[5], Thorek accused me of sins of omission and commission, and in no uncertain terms held me up as a menace to society unless I should drop the electrosurgical applicator from my hand. Now, since I disagree with Thorek on a few points, and since he violently disagrees with me on everything, I fear that the reader may come to the conclusion that electrosurgical cholecystectomy is dangerous or worthless. That would be unfortunate, and warrants a discussion.

As a matter of fact electrosurgical cholecystectomy is safe, simple, and valuable. Be not disturbed by hair-splittings between fulguration, carbonization and coagulation so long as the biterminal coagulating current is used and a thorough job done[3]; and the larger vessels tied—and so long as drainage is used according to indications which hold for ordinary surgery[4]. The procedure is most helpful in the difficult case with sclerosis or inflammatory thickening in and about the gall-bladder and ducts, and, though Thorek uses it on all cases, it is not worth while where the vessels can be easily dissected.

In his letter Thorek says, "Experience contradicts Whitaker's conclusions on the behavior of electrocoagulated tissues." My conclusions were based on experiments with thirty-seven animals which were carefully reported[3]. In a new subject under investigation may not one man disagree with another, or even with the majority, if he believes his experiments justify so doing?

Thorek claims misrepresentation in my statement that he depends upon coagulation to stop the cystic artery. It is my belief that the artery and its branches should be tied instead of being coagulated, since it seems to me that the coagulum is likely to loosen sooner than the tie. I quote Thorek's answer to this[5]: "The fact is that I *never coagulate the cystic artery* but always ligate it. *Again, the coagulum never loosens* in undrained, properly performed operations but becomes absorbed." If the coagulum never loosens it would seem safer to coagulate the artery than to tie it; a catgut tie does loosen. Thorek's first article[3] to which I referred[4] makes no mention, either in the text or on the illustrations, of tying the cystic artery. His second and third articles[6, 7] do to be sure. I am sorry for having overlooked this. But why did he change his method? Maybe the coagulum became "absorbed" too soon.

Thorek says, "Careful scrutiny of the sixteen cases recorded by Whitaker forces the conclusion that unless one is equipped with a thorough knowledge of the principles underlying electrosurgical methods he had better hold on to the time-honored cold scalpel in surgery of the gall-bladder."

"Careful scrutiny" has disclosed (as the autopsies did[4]) that the method of electrosurgical cholecystectomy had nothing to do with the three deaths in my sixteen cases. One died weeks afterward from a stone left in the common bile duct. That happens occasionally in all the surgical families with which I am familiar—perhaps not in Dr. Thorek's. Another died of cardiac infarct which, though unknown, was present at the time of operation. Electrosurgical cholecystectomy or any other kind was a mistake. It was performed in the hope of relieving intolerable suffering. In this case and in the third[4], however, autopsy showed the coagulum on the gall-bladder bed firm; no liver damage; no bile leakage; no peritonitis, nor other cause of death concerned with the operative site. It would seem that Dr. Thorek was uncharitable to say the least in the foregoing statement and its implications.

Yet Thorek's condemnation of me as a dangerous individual is based on the death of these three patients in a series of sixteen—a mortality of "18.45 per cent" which he compares with "a global mortality of 9.6 per cent" in 12,144 cases[2]. (A series of sixteen selected cases, the majority with advanced disease, compared with a general series of 12,144!) Furthermore "accuracy demands"[5] that I "correct" one of Thorek's figures. Three of the sixteen died—a mortality, not of "18.45 per cent" but of 18.75 per cent! Thorek concluded[5]: "In other words twice as many people succumbed at the hands of Whitaker as in the *worst cases* (italics mine) operated on by surgeons elsewhere."

In view of these figures and this statement let us see how the "accuracy" invoked by Thorek in his letter fares when examined. His published articles[3, 6, 7] state "a global mortality of 9.28 per cent", with no mention of *"worst cases"*; also[3] "From a careful survey of the literature it appears that the average surgical mortality in uncomplicated cases is about eight to ten per cent, and in complicated cases, ten to twenty per cent". In my series of sixteen cases, mostly complicated, because I do not advise this method in simple cases, the mortality was 18.75 per cent. Certainly *statistics should have a generous admixture of intelligence and honesty.*

Compare Thorek's results: His operation has been performed "on 149 consecutive unselected patients without a single fatality[8]." These "unselect-

ed cases" naturally include every patient with a diseased gall-bladder, however complicated, upon whom he operates—"acute and chronic cholecystitis, cholelithiasis, gangrene of the gall-bladder, early perforation with escape of bile, suppurations, etc.[2]" In July, 1934 the number of these "consecutive unselected patients" without a fatality was 75[6]; to date it is 149[5].

Thorek says that I had "above fifty per cent of bile leaks[5]." "Accuracy demands" that I point out a fault, either in his count and computation, or in his intention. Seven out of the sixteen cases drained bile. In five of these no attempt was made to tie the cystic duct on account of the danger of dissection with obscured landmarks from inflammatory swelling. Perhaps Thorek can always safely dissect and tie the cystic duct so that there is no danger of leakage in these cases; but others cannot and do not. In the remaining two of the seven who drained bile the common duct was explored. Perhaps Thorek does not have bile leakage in these cases.

Thorek in the summary of his second article[6] says, "Drainage is entirely omitted." In the body of the article, however, he hedges a bit on this point and says, "In certain conditions drainage is a *necessity* (italics mine); namely, in obstruction of the common bile duct, icterus, progressive septic cholangeitides, *inability to peritonize the cystic duct and gall-bladder bed*, (italics mine) and the like." Examination shows that on account of extensive inflammatory changes these areas could not have been peritonized in ten of my sixteen cases[4] (even if I had wished to do so). I drained them. Thorek, according to the foregoing admission, would have drained them. Why does he condemn me for doing what he himself would have done? Furthermore, if, according to Thorek, drainage in combination with electrosurgery is so dangerous in these cases, though he grudgingly admits it should be done, why does he not eschew electrosurgery here? Yet he does treat them electrosurgically because his cases are "consecutive" and "unselected". It appears that in this question of drainage Dr. Thorek is inconsistent.

I shall perform a series of comparative experiments on dogs, using my original method *with drainage* in one set; and Thorek's method in the other. (In one experiment carried out according to his technique the dog was discovered a month later to have a large, cold subhepatic abscess[4].) With patients, however, in spite of Thorek's warning, I shall continue to use drainage in all cases of empyema and gangrene of the gall-bladder; and where the cystic duct cannot be cleanly and safely dissected, and securely tied; and where exploration of the bile ducts is performed.

REFERENCES

1. Whitaker, L. R.: Surgical management of gallbladder disease. New Eng. J. Med. **203:** 718 (Oct. 9) 1930.
2. Thorek, M.: Cholecystelectrocoagulectomy without drainage in treatment of gall bladder disease. Illinois M. J. **64:** 425 (Nov.) 1933.
3. Whitaker, L. R.: Electrosurgical cholecystectomy. I. Experimental observations. New Eng. J. Med. **213:** 596 (Sept. 26) 1935.
4. Idem: Electrosurgical cholecystectomy. II. Clinical application. New Eng. J. Med. **213:** 674 (Oct. 3) 1935.
5. Thorek, M.: Electrosurgical cholecystectomy. New Eng. J. Med. **213:** 995 (Nov 14) 1935.
6. Thorek, M: Electrosurgical obliteration of the gallbladder (seventy-five consecutive, unselected cases without mortality. J. A. M. A. **103:** 169 (July 21) 1934.
7. Thorek, M.: Electrosurgical obliteration of gallbladder. Arch. Phys. Therapy X-Ray & Radium. **16:** 207 (April) 1935.

LESTER R. WHITAKER, M.D.

41 Bay State Road,
Boston, Mass.

ARTICLES ACCEPTED BY THE AMERICAN MEDICAL ASSOCIATION COUNCIL ON PHARMACY AND CHEMISTRY

535 North Dearborn Street,
Chicago, Illinois,
November 2, 1935.

Editor, *New England Journal of Medicine*,

In addition to the articles enumerated in our letter of October 3 the following have been accepted:

Calco Chemical Co., Inc.

Acriflavine Neutral—Calco

Tablets Acriflavine Neutral—Calco, ½ grain (uncoated)

Scarlet Red Medicinal Biebrich—Calco

Lederle Laboratories, Inc.

Concentrated Solution Liver Extract Parenteral—Lederle, 1 cc.

Diphtheria Antitoxin, Globulin — Lederle-Modified

Tetanus Antitoxin, Globulin—Lederle-Modified

Rabies Vaccine—Lederle (Semple Method), 2 cc. vials

Sharp & Dohme

Apricot Allergenic Extract—Mulford; Artichoke Allergenic Extract — Mulford; Bass (Sea) Allergenic Extract—Mulford; Bean (Kidney) Allergenic Extract — Mulford; Bean (Soy) Allergenic Extract — Mulford; Blackberry Allergenic Extract — Mulford; Bluefish Allergenic Extract—Mulford; Brazilnut Allergenic Extract—Mulford; Brussel Sprouts Allergenic Extract—Mulford; Carp Allergenic Extract — Mulford; Chestnut Allergenic Extract — Mulford; Cinnamon Allergenic Extract—Mulford; Clove Allergenic Extract — Mulford; Cranberry Allergenic Extract—Mulford; Egg (Whole) Allergenic Extract—Mulford; Fig Allergenic Extract — Mulford; Hickory Nut Allergenic Extract—Mulford; Honey Dew Allergenic Extract—Mulford; Huckleberry Allergenic Extract — Mulford; Lactalbumen Allergenic Extract—Mulford; Lemon Allergenic Extract—Mulford; Lentil Allergenic Extract—Mulford; Okra Allergenic Extract—Mulford; Olive Allergenic Extract—Mulford; Pea (Black-eyed) Allergenic Extract—Mulford; Pepper (Red) Allergenic Extract—Mulford; Pepper (Sweet) Allergenic Extract — Mulford; Perch Allergenic Extract—Mulford; Plum Allergenic Extract—Mulford; Pumpkin Allergenic Extract

Mulford; Radish Allergenic Extract — Mulford; Raspberry Allergenic Extract — Mulford; Rhubarb Allergenic Extract — Mulford; Scallop Allergenic Extract—Mulford; Shad Allergenic Extract—Mulford; Shad Roe Allergenic Extract—Mulford; Smelt Allergenic Extract — Mulford; Swiss Chard Allergenic Extract—Mulford; Trout (Sea) Allergenic Extract—Mulford; Turkey Allergenic Extract — Mulford; Vanilla Allergenic Extract — Mulford; Watermelon Allergenic Extract—Mulford; Yeast Allergenic Extract—Mulford; Camel Hair Allergenic Extract—Mulford; Goat Hair Allergenic Extract — Mulford; Hog Hair Allergenic Extract — Mulford; Cottonseed Allergenic Extract — Mulford; Dust, House Allergenic Extract—Mulford; Glue (Fish) Allergenic Extract—Mulford; Pyrethrum Allergenic Extract—Mulford; Silk Allergenic Extract—Mulford; Tobacco Allergenic Extract—Mulford.

E. R. Squibb & Sons
Ipral Sodium Tablets, ¾ grain
Ipral Sodium Tablets, 2 grains

White Laboratories, Inc.
White's Cod Liver Oil Concentrate (Liquid), 5 cc. vials

Winthrop Chemical Co., Inc.
Ampules Novocain Solution 2%, 3 cc.
Ampules Novocain Solution 10%, 2 cc.
Sterile Ampules Novocain Crystals for Spinal Anesthesia, 300 mg.
Sterile Ampules Novocain Crystals for Local Anesthesia, 500 mg.

The following products have been accepted for inclusion in the List of Articles and Brands Accepted by the Council But Not Described in N.N.R. (New and Nonofficial Remedies, 1935, p. 445):

Arlington Chemical Co.
Arlco Proteins (for Diagnosis)

Eli Lilly & Co.
Lubricating Jelly—Lilly

Your sincerely,

PAUL NICHOLAS LEECH, *Secretary*,
Council on Pharmacy and Chemistry.

RECENT DEATHS

ROBERTS — FREDERICK ALPHA ROBERTS, M.D., of Pittsfield, Massachusetts, died suddenly November 30, 1935.

He was born in Jacksonville, Vermont, in 1863, and graduated from the College of Physicians and Surgeons of Baltimore in 1897.

He was a Fellow of the Massachusetts Medical Society and the American Medical Association. He is survived by his widow; an adopted daughter, Leonette Roberts, and a brother, Arthur Roberts, of Brattleboro, Vermont.

PHELPS—OLNEY WINDSOR PHELPS, M.D., of Warren, Massachusetts, died at his home, December 2, 1935, after a brief illness following a year's gradual physical decline.

He was born in Waitsfield, Vermont, February 11, 1848. Following graduation from the Dartmouth Medical School in 1878 he served as assistant physician in the Insane Asylum at Brattleboro, Vermont. In 1882 Dr. Phelps moved to Bellows Falls, Vermont, where he practiced for three years. In 1891 he moved to Warren, Massachusetts. His total medical career covered fifty-seven years.

Dr. Phelps was a member of the board of health and the school committee of Warren for several years and was active in civic organizations. He joined the Massachusetts Medical Society in 1892 and retired in 1914.

His widow, Mrs. Florence Johnson Phelps; a son, Dr. Olney Draper Phelps, of 27 Elm Street, Worcester, Massachusetts; two grandchildren, and a brother, Elleroy E. Phelps, of Lebanon, New Hampshire, survive him.

ADLER—HERMAN MORRIS ADLER, M.D., died at the Phillips House of the Massachusetts General Hospital, December 7, 1935.

He was born in 1876 and graduated from the Columbia University College of Physicians and Surgeons of New York in 1901. His premedical education was acquired at Harvard College and later he returned to Boston, after having established a reputation in psychiatry, to serve as assistant professor of psychiatry at the Harvard Medical School from 1912 to 1917, and chief of staff of the Boston Psychopathic Hospital.

Dr. Adler was especially noted for accomplishments in criminology and psychopathology and held the position of professor of medical jurisprudence and criminology at the medical college of the University of Illinois and later occupied the same chair at the University of California.

He was a Fellow of the Massachusetts Medical Society. Dr. Adler is survived by his widow. His family home was in Berkeley, California.

NOTICES

MASSACHUSETTS MEMORIAL HOSPITALS

The problem of "The Application of Proper Surgical Technique in the Operating Room" will be presented for consideration at the next Surgical Section meeting on December 13, 1935, at 12 o'clock noon in the Ladies' Aid Room, Talbot Memorial.

The speakers' list, which was scheduled for that meeting, will be presented at a Special Meeting, December 20, 1935, at 12 o'clock noon.

MILO C. GREEN, *Secretary*.

REMOVAL

JOHN ROCK, M.D., has removed his office to the Free Hospital for Women, 8 Cumberland Avenue, Brookline. Telephone Longwood 0264.

UNITED STATES CIVIL SERVICE EXAMINATIONS

Junior Medical Officer (Interne), $2,000 a Year

Junior Medical Officer (Psychiatric Resident), $2,000 a Year

St. Elizabeths Hospital, Washington, D. C.

Applications must be on file with the manager of the Fourth U. S. Civil Service District, Washington, D. C., not later than December 16, 1935.

The United States Civil Service Commission announces open competitive examinations for the positions named above. Vacancies in these positions and in positions requiring similar qualifications will be filled from these examinations, unless it is found in the interest of the service to fill any vacancy by reinstatement, transfer, or promotion.

Application forms.—The necessary forms may be obtained from the Secretary, Board of United States Civil Service Examiners, at any first-class post office, or from the United States Civil Service Commission, Washington, D. C. (the title of the examination desired should be stated).

Social Worker Positions

Applications for the positions of social worker (psychiatric) and junior social worker, United States Veterans' Administration, must be on file with the U. S. Civil Service Commission, Washington, D. C., not later than January 6, 1936.

Full information may be obtained from the Secretary of the United States Civil Service Board of Examiners at the post office or customhouse in any city which has a post office of the first or the second class, or from the United States Civil Service Commission, Washington, D. C.

MEDICAL CLINIC AND STAFF ROUNDS AT THE PETER BENT BRIGHAM HOSPITAL

At 3:30 P.M. on Thursday, December 19, in the Amphitheatre of the Peter Bent Brigham Hospital, Dr. Henry A. Christian, Physician-in-Chief, Hersey Professor of the Theory and Practice of Physic in the Harvard Medical School, will give a medical clinic. To it are cordially invited practitioners and medical students.

Owing to the holidays, the clinics of December 26 and January 2 will be omitted.

On Saturdays in the wards of the Peter Bent Brigham Hospital, from 10 to 12, staff rounds will be conducted by Dr. Christian.

INTERNATIONAL MEDICAL POSTGRADUATE COURSES IN BERLIN

The Berliner Akademie für ärztliche Fortbildung, the successor of the Dozentenvereinigung für ärztliche Fortbildung in Berlin, which is managed by the Chief Burgomaster of Berlin, is holding the following medical postgraduate courses in the spring of 1936:

1. Course on the practical results of recent research work in the domain of internal medicine (February 24 to March 4).
2. Syphilis of the internal organs (March 5 to 7).
3. Courses in tuberculosis in the City of Berlin's Tuberculosis Hospital "Waldhaus Charlottenburg" in Sommerfeld (March 16 to 21).
4. A week's postgraduate course in obstetrics and gynecology (March 23 to 28).
5. Practical progress of x-ray diagnosis and radiotherapy, paying regard to clinical, pathological-anatomical and physiological points of view (March 9 to 14).
6. A week's course in abdominal surgery (April 20 to 25).
7. Introductory course in homeopathy (April 20 to May 16).
8. Special courses in all branches of medicine with practical work at the bedside and in the laboratory are held every month.

Courses 1 to 7 will be held in German, and the special courses also in foreign languages.

For programs and further information apply to the Geschäftsstelle der Berliner Akademie für ärztliche Fortbildung, Berlin NW7, Robert Koch-Platz 7 (Kaiserin Friedrich-Haus).

REPORTS AND NOTICES OF MEETINGS

LECTURE ON THE CARE OF THE PATIENT

Dr. Arthur R. Crandell of Taunton, Mass., delivered a lecture on "The Care of the Patient" Thursday, November 14, at the Harvard Medical School. He presented views of a general practitioner in a moderate-sized city, which, although differing from those of physicians in rural communities and metropolitan districts, have the common aim with them of improving the general welfare of the patient. The family practitioner must be content with a life of general service, instead of the brilliant career of the specialist.

The great increase in medical knowledge in the last half century has changed the situation of the general practitioner. He no longer can hope to possess a thorough knowledge of the whole field of medicine, nor personally to give to his patients many of the benefits of modern scientific therapy. He must become a skilled internist, referring patients requiring special forms of treatment to qualified specialists.

Dr. Crandell commented on the state of medical knowledge forty years ago. At that time the public was well satisfied with "snap diagnoses", and considered the physician as more or less of a "necromancer". There were relatively few hospitals; laboratories were poorly equipped; preventive medicine had not yet been developed; diphtheria control was inadequate; typhoid fever was rampant, diabetes

was an uncontrollable disease, and pernicious anemia was incurable. The etiology and treatment of syphilis were unknown, physiology was poorly understood, and the x-ray was just coming into use. The advancement, even in these few instances, during the past forty years is truly striking.

The care of the sick has been a problem since primitive times. The standard of such care changes from year to year, and from community to community. The ability of the physician to provide medical care is dependent on the social background in which he practices, his preliminary education, and his medical school and hospital training. A patient should not be considered as another "case", but as a human being suffering from a malady. All patients have some reason for seeking a medical consultation, although in some instances they may desire nothing more than an audience for the recital of their woes. The differentiation of actual and imagined disease is often a serious problem, but a careful history and a thorough physical examination will serve to establish the diagnosis in most instances.

The patient should be made to believe that he is the sole immediate concern of the physician, and that his ills will be cured if possible. Fifty per cent of success in practice is due to the appearance and behavior of the physician, and many large practices have been acquired by men with attractive personalities, but of only mediocre medical ability.

The practice of the "art of medicine" is in no situation so impressive as in the home of the patient. Here the knack of making him comfortable and treating the idiosyncrasies of mind and body are of the utmost importance.

Dr. Crandell emphasized the necessity of prenatal obstetrical, and infant care. The practitioner must do his best to enable his patients to raise healthy children, and maintain maternal strength.

The professional relations of the doctor and patient should be very definitely understood in the mind of every physician. There should be no need of resorting to subterfuges in medical treatment. Every patient justifies a thorough physical examination, although the advisability of a periodic examination of every patient is subject to debate. Wise conservatism should be used in dealing with each case, and surgical measures must be advised only in well-considered instances. The general practitioner should refrain from performing major surgical procedures, unless he fully appreciates the risks involved, and the seriousness of possible mistakes. Accurate diagnoses are of great importance, and the general practitioner should do his best to establish such a diagnosis before seeking the aid of a specialist. Consultations with other local practitioners are often of value and, in addition to aiding the patient, serve to improve relationships between physicians of the community.

The boast of many family physicians that they "never take a vacation" is to be condemned. A definite vacation period at least once a year is essential for the best interests of both the patient and physician.

Dr. Crandell advocates general practitioners in smaller communities undertaking limited specialization in some one field, while still maintaining their general practice. Such procedures would serve to wipe out many professional jealousies, and improve the quality of medical service.

In speaking of the high cost of medical care, Dr. Crandell attributed much of such expense to the use of the many new laboratory diagnostic measures, hospital studies, and nursing care. The general practitioner receives little of the increased funds expended by the patient. Most hospitals are operating at a deficit and many are being forced to close their doors. The solution of these problems should come from, and be controlled by, the physicians themselves. Any system discouraging the direct relationship between the physician and patient is bad, and not to be considered adequate.

THE ESSEX SOUTH DISTRICT MEDICAL SOCIETY

A stated meeting of the Essex South District Medical Society was held on December 4, 1935, at the Salem Hospital.

From 5 until 7 P.M., members of the Salem Hospital Staff contributed a very interesting and instructive clinic.

At the following 7 P.M. dinner, the guest speaker was Dr. Soma Weiss, who is associated with the Thorndike Memorial and Boston City Hospitals.

After a brief survey of the full and useful life of Richard Bright, he spoke on certain aspects of nephritis and of the necessity for a careful interpretation of urinary findings. He also carefully explained the new nomenclature and the significant advances in the diagnostic differentiation and the consequent treatment, local or general.

NATHANIEL POPE BREED, M.D., *Reporter.*

MASSACHUSETTS PSYCHIATRIC SOCIETY

The Massachusetts District of the American Psychiatric Association

The next meeting of the Massachusetts Psychiatric Society will be held at the Boston Psychopathic Hospital on December 13, 1935, at 8:00 P.M.

PROGRAM

Report of the Committee for the Investigation of Sterilization. By Dr. Abraham Myerson.

Frequency of Active Tuberculosis in a Hospital for Mental Diseases with Special Reference to Schizophrenia. By Dr. David Rothschild.

The following names of applicants for membership will be submitted for action:

Dr. Walter Earl Barton, Worcester
Dr. W. Everett Glass, Worcester
Dr. William Charles Inman, Danvers

Dr. Olga Steinecke, Taunton
Dr. Benjamin Margulois, Dorchester Center
Dr. Charles C. Joyce, Danvers.

Light refreshments will be served.

W. Franklin Wood, M.D., *Secretary.*

Address: McLean Hospital,
Waverley, Mass.

NEW ENGLAND OPHTHALMOLOGICAL SOCIETY

The next meeting of the New England Ophthalmological Society will be held on Tuesday, December 17, 1935, at the Massachusetts Eye and Ear Infirmary, 243 Charles Street, Boston.

PROGRAM

9:00 A.M.—Clinic and Operating Room.
11:30 A.M.—Neuro-Ophthalmological Conference.

EVENING PROGRAM

8:00 P.M.

Case Report:

Color Blindness. Dr. William Rowland.

Malarial Treatment of Interstitial Keratitis. Dr. Benjamin Riseman. Dr. H. Houston Merritt. (By invitation.)

Paper:

Surgery of the Cornea. Dr. Ramon Castroviejo, New York.

Benjamin Sachs, M.D., *Secretary.*

BOSTON MEDICAL HISTORY CLUB

Boston Medical Library, 8 Fenway, Monday, December 16, 1935, at 8:15 P.M.

Benjamin Shattuck, Medical Practitioner of Templeton. By George Cheever Shattuck, M.D.

The Doctors Warren of Boston. By Joseph H. Pratt, M.D.

Benjamin Spector, M.D., *Secretary.*

NEW ENGLAND PHYSICAL THERAPY SOCIETY

The New England Physical Therapy Society will meet as the guests of the Ring Sanatorium and Hospital, 163 Hillside Avenue, Arlington Heights, Massachusetts, on Wednesday evening, December 18, 1935.

A buffet supper will be served at six-thirty and the meeting will open promptly at eight.

The subject under discussion will be the present status of physical therapy in the mental hospitals of this state with a forecast as to future trends.

PROGRAM

Inventory and Forecast. Clifton T. Perkins, M.D., Assistant to the Commissioner, Massachusetts Department of Mental Diseases.

The discussion will be opened by Winfred Overholser, M.D., Commissioner, Department of Mental Diseases.

Time will be allowed for general discussion.

Physicians are cordially invited to attend.

William D. McFee, M.D., *Secretary.*

41 Bay State Road,
Boston, Massachusetts.

SOCIETY MEETINGS, CONGRESSES AND CONFERENCES

CALENDAR OF BOSTON DISTRICT FOR THE WEEK BEGINNING MONDAY, DECEMBER 16, 1935

Monday, December 16—

*9-10 A.M. Boston Dispensary, 25 Bennet Street, Boston. Social Service Case Presentation. Miss Edith Canterbury.

8:15 P.M. Boston Medical History Club. Boston Medical Library, 8 Fenway.

Tuesday, December 17—

*9-10 A.M. Boston Dispensary, 25 Bennet Street, Boston. Nephritis. Dr. Henry D. Stebbins.

9 A.M., 11:30 A.M., 8 P.M. New England Ophthalmological Society. Massachusetts Eye and Ear Infirmary, 243 Charles Street, Boston.

*12 M. South End Medical Club. Office of the Boston Tuberculosis Association, 554 Columbus Avenue, Boston.

2:30 P.M. Pediatric Ward Visit. Massachusetts Eye and Ear Infirmary.

7:45 P.M. Gardner Auditorium, State House, Boston. Adult Problems: "The Blues" and Fatigue States. Dr. Karl M. Bowman.

Wednesday, December 18—

*9-10 A.M. Boston Dispensary, 25 Bennet Street, Boston. Ward Cases. Dr. S. J. Thannhauser.

†12 M. Clinico-Pathological Conference. Children's Hospital.

6:30 P.M. New England Physical Therapy Society, buffet supper. *8 P.M. Meeting. Ring Sanatorium and Hospital, Arlington Heights.

Thursday, December 19—

*8:30-9:30 A.M. Clinic, Surgical and Orthopedic Staffs of Children's Hospital, at the Children's Hospital.

*9-10 A.M. Boston Dispensary, 25 Bennet Street, Boston. Uric Acid in the Pathogenesis of Gout. Dr. Bernard Jacobson.

*3:30 P.M. Medical Clinic at the Peter Bent Brigham Hospital.

Friday, December 20—

*9-10 A.M. Boston Dispensary, 25 Bennet Street, Boston. Ward Cases. Dr. S. J. Thannhauser.

12 M. Clinical Meeting of the Children's Medical Staff. Ether Dome, Massachusetts General Hospital.

12 M. Massachusetts Memorial Hospitals. Surgical Section Meeting.

Saturday, December 21—

*9-10 A.M. Boston Dispensary, 25 Bennet Street, Boston. Treatment of Diabetes. Dr. S. J. Thannhauser.

*10-12. Staff rounds at the Peter Bent Brigham Hospital.

*Open to the medical profession.
†Open to Fellows of the Massachusetts Medical Society.

December 12—Alpha Omega Alpha Lecture. Harvard Medical School, Amphitheatre Building C, 5 o'clock.

December 13—William Harvey Society, Auditorium of the Beth Israel Hospital, Boston, at 8 P.M.

December 13—Boston Floating Hospital, Board Room, 12 noon to 1 P.M.

December 13—Massachusetts Psychiatric Society. See page 1212.

December 13—Massachusetts Memorial Hospitals. See page 1210.

December 16—Springfield Medical Association. See page 1157, issue of December 5.

December 16—Boston Medical History Club. See notice elsewhere on this page.

December 17—The South End Medical Club. 12 noon, office of the Boston Tuberculosis Association, 554 Columbus Avenue, Boston.

December 17—New England Ophthalmological Society. See notice elsewhere on this page.

December 18—New England Physical Therapy Society. See notice elsewhere on this page.

December 19—Medical Clinic at the Peter Bent Brigham Hospital. See page 1211.

December 20—Massachusetts Memorial Hospitals. See page 1210.

February 24 to May 16, 1936—International Medical Postgraduate Courses in Berlin. See page 1211.

DISTRICT MEDICAL SOCIETIES

ESSEX SOUTH DISTRICT MEDICAL SOCIETY

January 8—Wednesday. Danvers State Hospital, Hathorne. Clinic 5 P.M. Dinner 7 P.M. Speaker: Dr. Hoskins. Subject: To be announced later.

February 5—Council Meeting, Boston.

February 12—Wednesday. Addison Gilbert Hospital, Gloucester. Clinic 5 P.M. Dinner 7 P.M. Speaker and subject to be announced later.

March 4—Wednesday. Lynn Hospital. Clinic 5 P.M. Dinner 7 P.M. Speaker: Dr. Timothy Leary. Subject: Arteriosclerosis.

April 1—Wednesday. Essex Sanatorium, Middleton. Clinic 5 P.M. Dinner 7 P.M. Speaker: Dr. Richard H. Overholt of the Lahey Clinic. Subject: Chest Surgery.

May 7—Thursday. Censors' Meeting.

May 13—Wednesday. Annual Meeting. Salem Country Club. Dinner at 7 P.M. Speaker: Dr. Paul White. Subject to be announced later.

R. E. STONE, M.D., Secretary.

FRANKLIN DISTRICT MEDICAL SOCIETY

Meetings are held on the second Tuesday of January, March and May at the Weldon Hotel, Greenfield, at 11 A.M.

CHARLES MOLINE, M.D., Secretary.

MIDDLESEX EAST DISTRICT MEDICAL SOCIETY

Meetings to be held at the Bear Hill Golf Club at 12:15 P.M.

January 8.

March 11.

May 6.

NORFOLK DISTRICT MEDICAL SOCIETY

January 28, 1936—Hotel Kenmore at 8 P.M. Subject: "Compulsory Sickness Insurance." Speakers to be announced.

February 25, 1936—Massachusetts Memorial Hospitals at 8 P.M. Papers by the staff.

March 31, 1936—Hotel Kenmore, at 8 P.M. Dr. Benedict F. Boland—"Cauterization of the Cervix Uteri Using Various Electrical Methods." Illustrated with lantern slides.

May, 1936—Annual Meeting. (Place, date and subject to be announced.)

The censors meet for the examination of candidates: May 7, 1936; November 5, 1936.

FRANK S. CRUICKSHANK, M.D., Secretary.
1236 Beacon Street, Brookline, Massachusetts.

PLYMOUTH DISTRICT MEDICAL SOCIETY

January 16—Goddard Hospital. Subject and speakers to be announced later.

March 19—Plymouth County Sanatorium, South Hanson.

April 16—Brockton Hospital.

May 21—Lakeville State Sanatorium.

G. A. MOORE, M.D., Secretary.

SUFFOLK DISTRICT MEDICAL SOCIETY

January 29, 1936—Joint Meeting with the Boston Medical Library at 8 Fenway. "Observations Around the World," Dr. Walter B. Cannon.

March 18, 1936—Meeting at the Boston Medical Library. "The Laboratory and Clinical Story of Fatigue," Dr. Arlie V. Bock and Dr. David B. Dill. Discussion: Dr. Donald J. MacPherson and Dr. Augustus Thorndike, Jr.

April 29, 1936—Annual Meeting at the Boston Medical Library. "The Treatment of Septicaemia," Dr. Champ Lyons. "The Pleurality of Scarlatinal Streptococcus Toxin," Dr. Sanford B. Hooker. Discussion: Dr. Hans Zinsser.

The medical profession is cordially invited to attend all of these meetings.

ROBERT L. DeNORMANDIE, M.D., President,
CHARLES C. LUND, M.D., Secretary,
FRANCIS T. HUNTER, M.D.,
Boston Medical Library.

WORCESTER DISTRICT MEDICAL SOCIETY

January 8, 1936—Wednesday evening. Worcester City Hospital, Worcester, Mass. Dinner and scientific program. Subjects of program to be announced later.

February 12, 1936—Wednesday evening. Worcester State Hospital, Worcester, Mass. Dinner and scientific program. Subjects of program to be announced later.

March 11, 1936—Wednesday evening. Memorial Hospital, Worcester, Mass. Dinner and scientific program. Subjects of program to be announced later.

April 8, 1936—Wednesday evening. Hahnemann Hospital, Worcester, Mass. Dinner and scientific program. Subjects of program to be announced later.

May 13, 1936—Wednesday afternoon and evening. Annual Meeting of Society. Time, place and details of program to be announced in an April issue of the Journal.

ERWIN C. MILLER, M.D., Secretary.

BOOK REVIEWS

Handbook of Anaesthetics. J. Stuart Ross and H. P. Fairlie. Fourth Edition. 299 pp. Baltimore: William Wood & Company. $4.00.

This country lacks, to a sad degree, a modern textbook of practical instruction in anesthesia. The "Handbook of Anaesthetics", written by two anesthetists of Edinburgh and Glasgow for the instruction of medical students, unfortunately fails to meet this need. According to our present standards here, its atmosphere is unwonted and out-of-date, for it is permeated with the odor of chloroform, and, with its frequent descriptions of certain closed methods of gas and vapor administration, it is stifling from lack of oxygen.

The chapters on shock, anoxemia, nitrous oxide, ethylene, and chloroform are notably good. Also those on local and spinal anesthesia, written by a third author, are definitely praiseworthy, though they suffer from brevity. The chapter on choice of anesthetics deals with only five drugs, two of which are chloroform and ethyl chloride; the carbon dioxide absorption method of giving gases, now well established in this country, is skeptically referred to as experimental; the use of carbon dioxide for hastening induction and recovery is not mentioned; and no modern gas machine commonly used in this country is described; for these reasons the book is unsuited to the student of anesthesia here. Because suction is not mentioned among the methods given for clearing the respiratory tracts of fluids, because asphyxia of the infant is entirely omitted from the discussion of anesthesia during labor, and because a maximal dose of avertin is advised without any qualifying provisions; for such reasons the book appears to be even unsafe to put into the hands of those who most need a handbook of anesthetics.

Midwifery. By ten teachers under the direction of Clifford White. Edited by Comyns Berkeley, J. S. Fairbairn and Clifford White. Fifth Edition. 740 pp. New York: William Wood & Company. $6.00.

This is a textbook on obstetrics written by ten well-known English obstetricians. It is interesting to have such a book to refer to in order to see how our English confreres carry out obstetrical procedures. For use as a textbook in America it will scarcely be a success, because the treatment that is advised in various complications and the techniques used are not those to which American obstetricians subscribe. As a reference book, however, it is of value.